

AN ARCHEOLOGICAL SURVEY OF HUNTING AREA 4,
FORT KNOX, HARDIN AND MEADE COUNTIES, KENTUCKY

Submitted to:

The Directorate of Engineering and Housing
U.S. Army Armor Center and Fort Knox
Fort Knox, Kentucky 40121-5000

Prepared by

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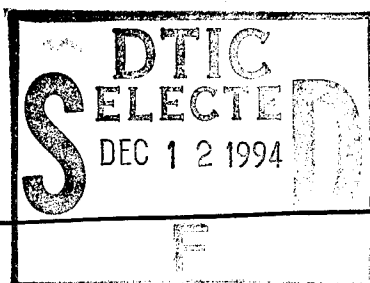
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Hunting Area 4, Fort Knox was intensively surveyed for cultural resources from December 1992 to March 1993 in preparation for an impending timber sale. The area surveyed comprises approximately 813 acres (329 ha), of which 270 acres (109.3 ha) will be affected by this project. The survey was conducted by the author as Staff Archeologist for Fort Knox. Four new sites (15Md335, and 15Hd479-15Hd481) were recorded in the survey. Two sites (15Md335 and 15Hd480) lie outside the timber sale area and two sites (15Hd479 and 15Hd481) lie inside. 15Hd480 is a prehistoric site of indeterminate cultural affiliation. 15Hd479 has both prehistoric and historic components. 15Hd481 and 15Md335 are historic sites. Sites 15Hd479 and 15Hd481 will be avoided during the timbering operations.



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ABSTRACT

A portion of Fort Knox, Kentucky, called Hunting Area 4 was intensively surveyed for cultural resources from December, 1992, to March, 1993. The survey was initiated because of an impending timber sale within Hunting Area 4. The total surveyed area consists of approximately 813 acres (329 ha) of forested, rolling hills in Meade and Hardin Counties, Kentucky, of which 270 acres (109.3 ha) will be affected by this project. The survey was conducted by the author as Staff Archeologist for Fort Knox. On two separate occasions, staff from the Forestry Section at Fort Knox assisted during pedestrian survey, and in screening shovel test excavations under supervision of the Staff Archeologist.

Four new sites were recorded for Hunting Area 4. Two lie outside the timber sale area (15Md335 and 15Hd480), while two lie within the 270 acre parcel (15Hd479 and 15Hd481). Three sites are historic period sites, one of which has a prehistoric component. The fourth site, 15Hd480, is prehistoric in age, but is not assigned to a specific time period as no diagnostic artifacts have been found.

The boundaries of the timber sale have been modified so that 15Hd479 and 15Hd481 will not be affected by logging or related activities. Also, any earthmoving activities will be monitored by the Staff Archeologist to enhance chances of finding sites not detected by normal survey techniques. The Acting Land Manager, Mr. David Apsley, and the Forester, Mr. John Whitesides, have provided assurance that any new sites detected behind heavy equipment will be afforded full protection.

ACKNOWLEDGEMENTS

This survey was greatly assisted by the entire staff of the Forestry Section. David Apsley and John Whitesides assisted in pedestrian survey on more than one occasion, and Gerry Gaines assisted with shovel tests and screening at 15Hd480. Bucky Phelps took delight in finding the historic features of 15Hd481 during the tree survey before the plodding archaeologist could find them.

Mr. Charles Hockensmith of the Kentucky Heritage Council, and Dr. Berle Clay of the Office of the State Archeologist, Lexington, provided the Staff Archeologist with copies of data for all the archeological sites and surveys pertaining to the immediate area of Fort Knox, saving a number of trips by car to those offices. I am deeply indebted to them both.

Two long-time citizens of this locality added immensely to the knowledge we now have regarding two of the historic house sites. Mr. Richard A. Briggs, the retired Postmaster of West Point, is an avocational historian of great accomplishments. It was he who provided photocopies of an 1848 map which is referenced later in the report, and it was his book, *The Early History of West Point, Hardin County, Kentucky*, that provided much of the good data in the historical overview. Mr. Claude L. Withers, of Brandenburg, has provided important details concerning a number of historic sites in and around Fort Knox, and several important sections of this report relied heavily on his recollections.

TABLE OF CONTENTS

ABSTRACT	i
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iii
LIST OF FIGURES	v
LIST OF TABLES	v
 I. INTRODUCTION	 1
II. ENVIRONMENTAL SETTING	2
Project Setting	2
Climate	3
Geology and Topography	3
Hydrology	7
Soils	7
Alford Silt Loam, 2 to 6 Percent Slopes	8
Alford Silt Loam, 6 to 12 Percent Slopes, Eroded	8
Alford Silt Loam, 12 to 20 Percent Slopes	8
Baxter Gravelly Silt Loam, 20 to 30 Percent Slopes	8
Crider Silt Loam, 6 to 12 Percent Slopes	9
Crider Silt Loam, 12 to 20 Percent Slopes	9
Garmon Silt Loam, 25 to 60 Percent Slopes	9
Garmon Rockland Complex, 25 to 60 Percent Slopes	10
Hosmer Silt Loam, 2 to 6 Percent Slopes	10
Vertrees Silt Loam, 20 to 30 Percent Slopes	10
Flora	10
Fauna	12
 III. CULTURAL OVERVIEW	 14
Prehistoric Overview	14
Paleoindian Period (ca. 9500 - 8000 B.C.)	14
Archaic Period (ca. 8000 - 1000 B.C.)	16
Woodland Period (ca. 1000 B.C. - A.D. 900)	17
Mississippian Period (ca. A.D. 900 - 1540)	19
Contact Period (ca. A.D. 1540 - 1795)	20
Historic Overview	22
Historic Settlement (1795 - 1918)	22
History of Fort Knox, 1918 to the present	23
Previous Archeological Investigations	25

IV.	RESEARCH DESIGN AND METHODOLOGY	26
	Research Design	26
	Methodology	27
	Literature Search	27
	Field Methods	28
	Laboratory Methods	29
	Curation of Project Materials	29
V.	RESULTS	30
	Maps and Historic Documents	30
	Site Descriptions	35
	15Hd480	35
	15Hd479	38
	15Hd481	41
	15Md335	44
VI.	SUMMARY AND CONCLUSIONS	46
	REFERENCES CITED	47

LIST OF FIGURES

Figure 1. Map of Fort Knox and Vicinity	4
Figure 2. Hunting Area 4 from USGS Quadrangle Maps	5
Figure 3. Map of Hunting Area 4 with Timber Sale Parcels	6
Figure 4. Portion of the 1903 Map of Camp Knox	31
Figure 5. Property Lines in Hunting Area 4 from 1919 Map	33
Figure 6. Sketch Derived from 1848 Map of Resurveyed Lands	34
Figure 7. Site Map of Site 15Hd480	37
Figure 8. Site Map of Site 15Hd479	40
Figure 9. Site Map of Site 15Hd481	42
Figure 10. Site Map of Site 15Md335	45

LIST OF TABLES

Table 1. Previous Investigations in the Project Vicinity	25
Table 2. Artifacts Found at Site 15Hd480	36
Table 3. Artifacts from 15Hd479	39
Table 4. Artifacts from 15Hd481	43

I. INTRODUCTION

In January and February, 1993, a cultural resources survey was conducted by the author as Staff Archeologist for the Directorate of Engineering and Housing (DEH), Fort Knox, Kentucky. The study area is a hilly 270 (109.3 ha) acre wooded tract within a larger 813 (329 ha) acre tract designated as Hunting Area Four (HA 4). This hunting area straddles the Meade County and Hardin County line west of Highway 31W, on and south of the Muldraugh Escarpment. This is classified as the Plain Section of the Pennyriple Management Area by the Kentucky Heritage Council (1991:24). The region is in gently to moderately rolling karst landform, covered by young to mature deciduous hardwood forest. Drainage is chiefly subterranean, with intermittent streams and springs draining east and north to Tioga Creek, a short tributary of the Ohio River.

The 270 acres have been selected by the Forestry Section (DEH) for an extended tree harvesting program in which approximately one fifth will be harvested in 1993, to be repeated every twenty years over the next 100 years. For various land management reasons, the first harvest will be comprised of 22 small parcels randomly selected. Most of the parcels measure 200 feet east-west by 400 feet north-south, with some irregular shapes caused by roads, pipeline crossings, and natural barriers. Rather than just survey the 24 parcels and their access roads, an area totaling approximately 40.4 acres (16.4 ha), it was decided that cultural resources would be best served by surveying the entire 270 acres as a unit with a goal of surveying the entire 813 acres of HA 4.

The purpose of the survey was to locate, describe, and assess cultural resources that lie within the bounds of the project in accordance with federal laws and regulations as applied in Army Regulation 420-40. The fieldwork began on December 10, 1992, and ran through March 2, 1993, totalling 408 person-hours. Each site studied will be subjected to further research at a later date to determine whether or not it meets the criteria for eligibility to the National Register of Historic Places (NRHP). As a practical matter, all cultural resources will be avoided by the first year timber harvest and access road construction. Weather and time constraints will not permit a full evaluation for the sites and determinations of eligibility to the NRHP prior to the project. It should be noted that site avoidance for all sites has been a standing policy of the Forestry Section at Fort Knox. Field notes and artifacts are temporarily housed at DEH, Fort Knox, and will be permanently curated at the University of Kentucky in Lexington.

This report is organized by major themes. Chapter II describes the project and its immediate setting, its physiography, hydrology, climate, geology, soils, flora, and fauna. Chapter III briefly summarizes what is known of the prehistory and history of the area including Fort Knox. Chapter IV presents a discussion of the methodology used in the investigation, and Chapter V presents the results. Chapter VI summarizes the survey and presents the conclusions. References cited in the text are listed after Chapter VI.

II. ENVIRONMENTAL SETTING

PROJECT SETTING

The project area occupies a portion of the northern periphery of Fort Knox, Kentucky. It straddles the line between Hardin and Meade Counties, just south of the Ohio River in the Western Pennyroyal physiographic region of Kentucky, part of the Mississippi Plateau. The non-cantonment areas of the roughly 109,000 acres that comprise Fort Knox are divided into numbered segments called hunting areas. The proposed timber harvest project lies within Hunting Area 4 (HA 4). This segment of the fort occupies high ground where Iron Mountain joins the Muldraugh Escarpment near the north boundary of the post (Figures 1 and 2). This long ridge can be described as a northern projection of the Muldraugh Escarpment formed as part of a relict meander of the Ohio River. High ground running northeast to southwest between Iron Mountain and Round Hollow is called Cameron Ridge.

Boundaries between hunting areas are usually marked by some observable natural or man-made feature, like a ridgetop, stream, or road, but not always. The Ohio River floodplain forms the northeastern boundary of Hunting Area 4, marked by a small stream running along the base of the ridge, called Tioga Creek. The east boundary is a straight segment of Highway 31W as it cuts through the escarpment, descending northeast to the floodplain from the town of Muldraugh. (Figure 3). The southern and western boundaries of HA 4 meander with little discernible correlation with mapped points on the ground. For practical purposes, the western boundary was revised to conform to the main north-south gravel road that diverges from the paved Carpenter Test Road near the southern boundary and wanders generally northward, exiting HA 4 at the Withers Cemetery. On old maps it was referred to as Pilcher's Ferry Road, but has most recently been referred to as Carpenter Test Road; this name will be retained here. A triangular section of HA 4 lies west of Carpenter Test Road and south of the dirt trail leading southwest from Withers Cemetery. That section was included in the survey since it forms the northwest corner of HA 4, and the boundary there follows dirt trails that appear on maps. From that corner, the northwest boundary of HA 4 leads northeast past the cemetery along an overgrown and impassible trail to the bluff overlooking the Ohio River floodplain. The point where the boundary crosses the bluff coincides with the cleared right-of-way for a gas pipeline.

CLIMATE

Hardin County's climate is described as hot in the summer and moderately cold in the winter, with fairly heavy rain throughout the year, especially in winter (Arms, et al. 1979:1). Measurements at Leitchfield, Kentucky, for the period 1951-1974 show an average of 46.75 inches of rainfall per year, and a growing season from roughly the first week in April until the last week in October, averaging approximately 200-220 days; a little more than half of the precipitation falls during the growing season (Arms, et al. 1979:1; 106-107). On average, the humidity ranges from 60 percent in the afternoon to 80 percent at dawn. The average available sunshine ranges from 67 percent in summer to 43 percent in winter. Winds are generally light from the south, peaking at an average 10 miles per hour in March (Arms, et al. 1979:1).

GEOLOGY AND TOPOGRAPHY

Hardin and Meade Counties lie within the Western Pennyroyal physiographic region of Kentucky, which is part of the Mississippian Plateau (Arms, et al. 1979:2). The study area includes the northernmost extent of a large intermittent karst topographic area which extends southwest to Hart County, and is studded with sinkholes and depressions. The underlying Mississippian age limestones can be seen in profile along the east margin of Hunting Area 4 where the roadbed for Highway 31W was cut through the Muldraugh Escarpment in the late 1930s. Some natural outcrops of the same bedrock are exposed along the northeast wall of the escarpment along an ancient meander of the Ohio River. The uppermost rock strata are visible as outcrops along steep slopes, along the scoured bottoms of drainages, and at the apertures in the bottoms of many sinkholes, leading to underground chambers of unknown size.

Elevations in Hunting Area 4 vary from 450 feet (137.2 m) AMSL along Tioga Creek at the north, to 794 feet (242 m) AMSL along a ridge-top road near the center of the Hunting Area. Since the timber sale areas do not extend down the steep escarpment, actual elevations seen in the timber sale areas fall between 685 (208.8 m) and 788 feet (240.2 m) AMSL. Within the timber sale blocks, slopes vary from 0 to 50 percent, but generally can be described as moderately steep, 15 to 20 percent slopes.

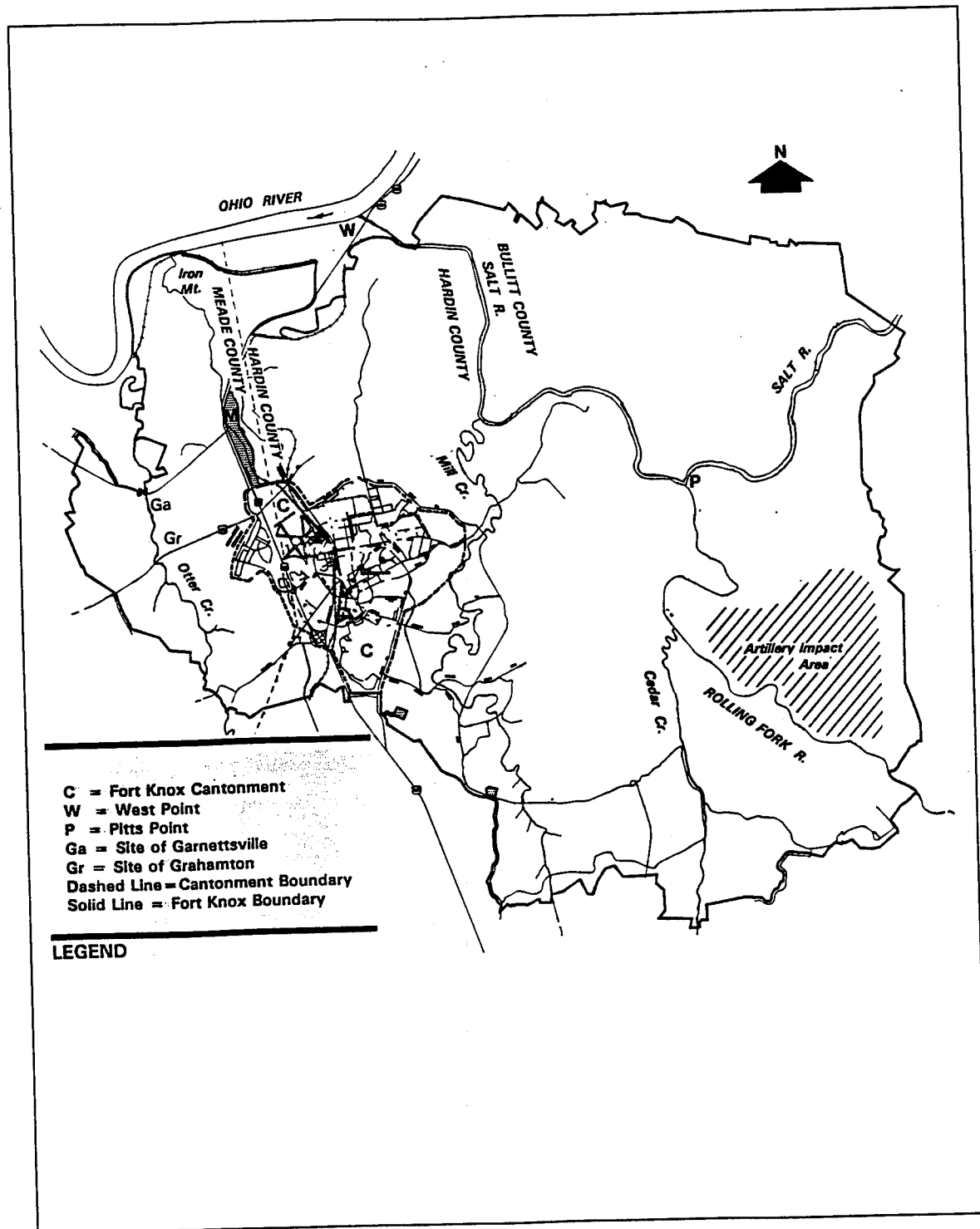


Figure 1. Map of Fort Knox and Vicinity.

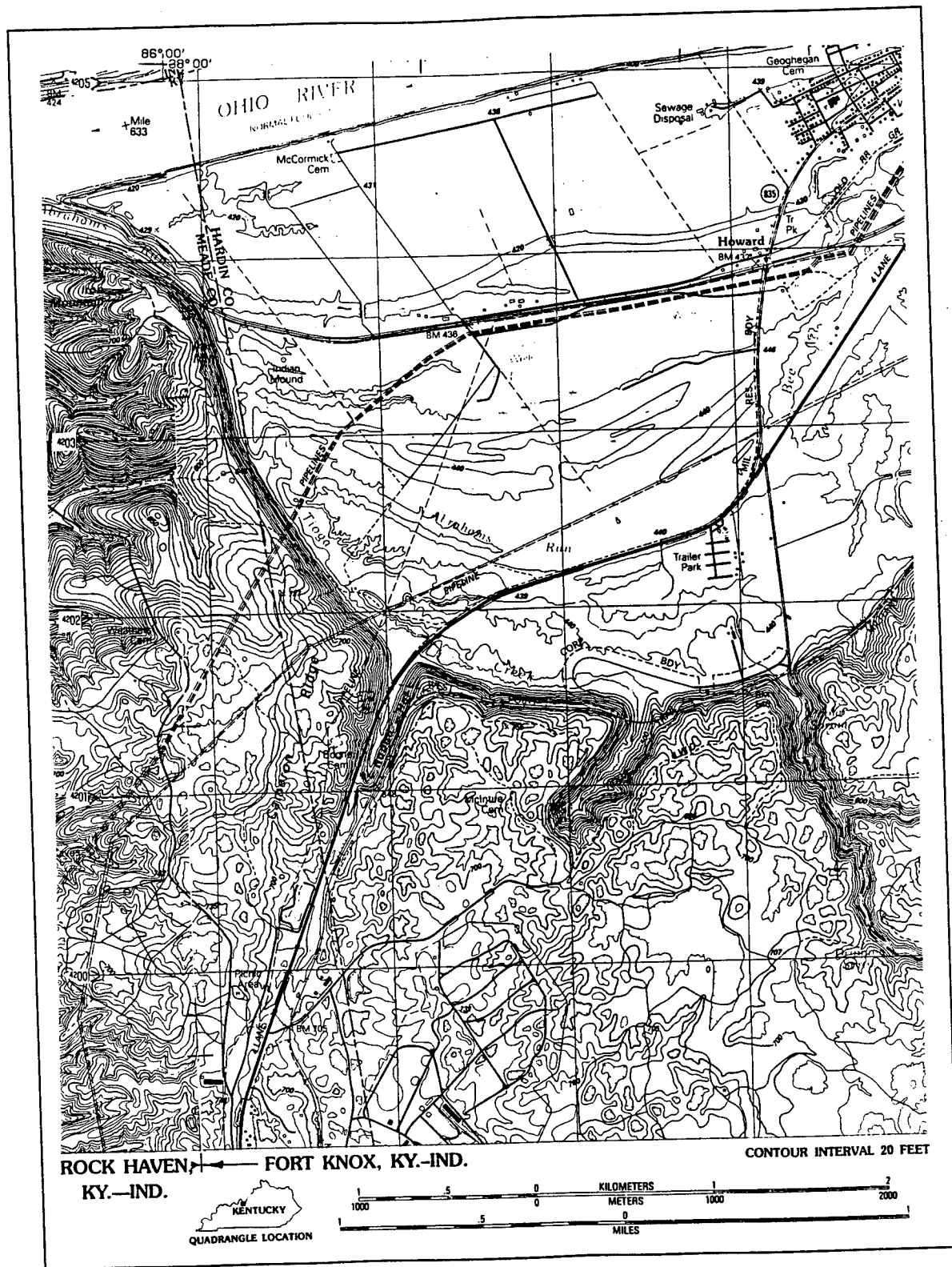


Figure 2. Hunting Area 4, from USGS Quadangle Maps.

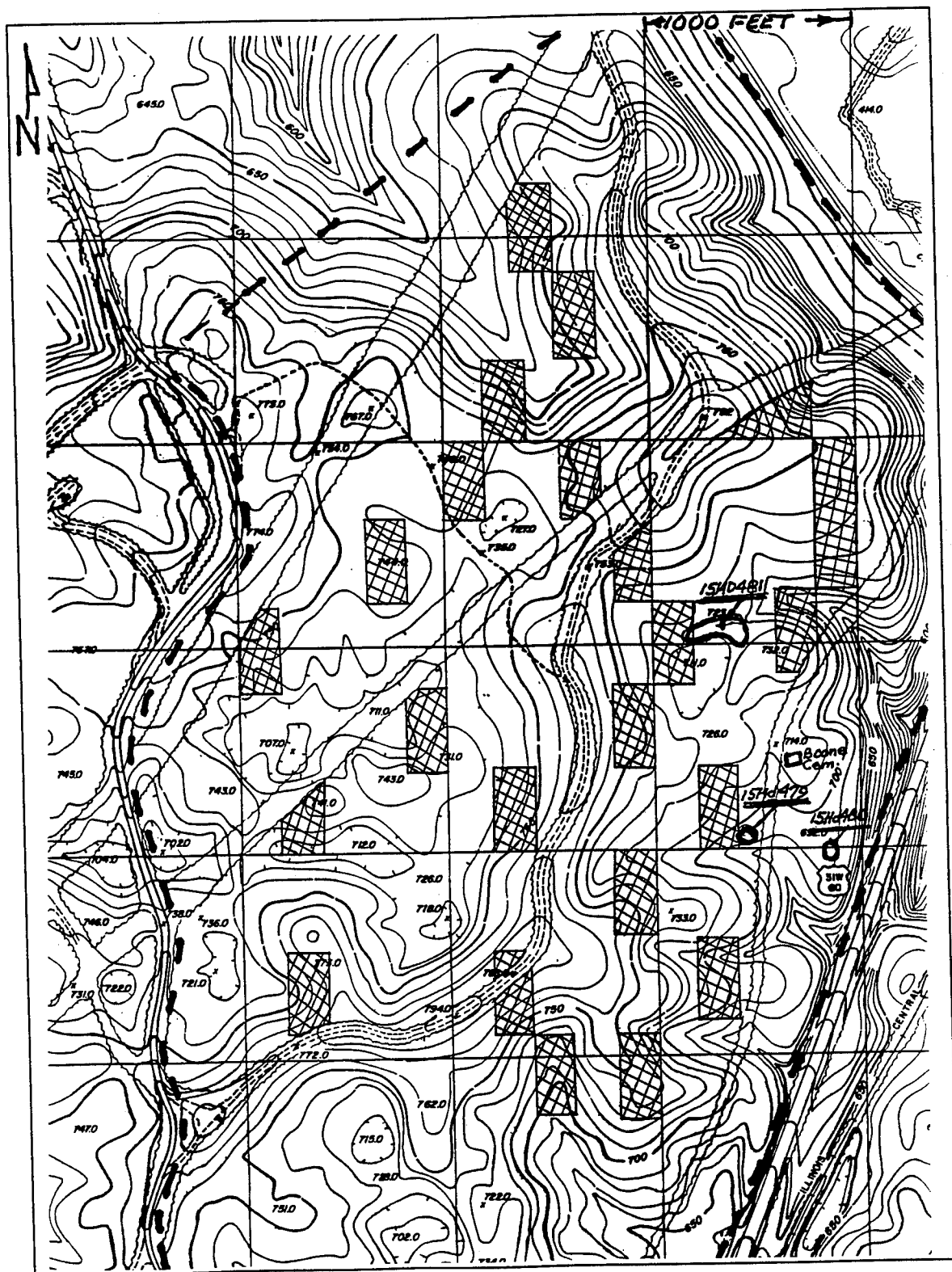


Figure 3. Map of Hunting Area 4 Showing Timber Sale Parcels, Sites.

HYDROLOGY

The project area is not far from two of Kentucky's most important water courses, in that the confluence of the Salt River and the Ohio River lies about three miles northeast of HA 4. But, most drainage within Hunting Area 4 is subterranean. Intermittent streams drain runoff from hillsides on the east margin of the area, but much of the runoff disappears into a sinkhole near the west side of Highway 31W, reappearing farther down Round Hollow. This water runs steeply to the northeast into Tioga Creek. Tioga Creek drains northwest into the Ohio River some four kilometers distant. Drainage on the steep slopes on the northeast and north sides, part of the Muldraugh Escarpment, also flow to the Ohio via Tioga Creek. This stream originates about a mile to the southeast at a strong spring, descends a locally famous waterfall, Tioga Falls, then runs along the base of the Muldraugh Escarpment to its confluence with the Ohio River northwest of the project area.

Two small springs were observed flowing from bedrock in intermittent drainages in the northeast portion of the project area, one of which was associated with a site discovered during the survey. Two other springs were found flowing from small caves, and both were associated with historic sites. The runoff from the southernmost of these accumulates behind a man-made dam into a well-stocked and managed pond called Crystal Lake. No other flowing water was observed. Standing water accumulates in some of the sinkholes and was observed in man-made depressions throughout the time of the survey. Rainfall increases the flow from springs, but none have been observed to dry up completely in recent years. Rainfall also temporarily increases the amount of water standing in small depressions. The clayey soils are generally of slow permeability and rains can leave trails impassible to two-wheel drive traffic for a week or more; some puddles did not disappear for the duration of the survey.

SOILS

The soils of Kentucky have been divided into 12 physiographic regions and association areas. That part of Fort Knox which includes Hunting Area 4 falls within the region called Western Pennyroyal - Limestone Area. It is described as a gently sloping sinkhole area, generally well-drained, with moderately high fertility. Five soil types have been mapped within the project area. The descriptions that follow are based on those in Arms, et al. (1979). Munsel soil color values and chroma are added, based on the color descriptions given with each representative profile.

Alford Silt Loam, 2 to 6 Percent Slopes

This soil type is deep, well drained, sloping soil formed in a mantle of loess, greater than 4 feet thick, on narrow ridgetops and sideslopes along the Ohio River. Most slopes are slightly convex and 50 to 100 feet in length. The typical profile shows a surface stratum of dark brown silt loam about 9 inches thick over a strong brown silt loam subsoil to 28 inches. From 28 to 45 inches is a yellowish brown silt loam (Haagen 1990).

Alford Silt Loam, 6 to 12 Percent Slopes, Eroded

Like the above soil type, this is deep, well drained, sloping soil formed in a mantle of loess, greater than 4 feet thick, on narrow ridgetops and sideslopes along the Ohio River. Part of the original topsoil has been removed by erosion. Most slopes are somewhat convex, dissected by intermittent drainageways, and 50 to 100 feet in length. Where erosion is slight, the typical profile resembles that given for Alford Silt Loam, 2 to 6 Percent Slopes. This soil is medium in fertility and organic matter content. At the surface, acidity varies and the subsoil is strongly acid. The root zone is deep and permeability is moderate, with a high capacity for water (Haagen 1990).

Alford Silt Loam, 12 to 20 Percent Slopes

Like the others in the Alford Series, this is a deep, well drained, sloping soil formed in a mantle of loess, greater than 4 feet thick, on narrow ridgetops and sideslopes along the Ohio River. Slopes are complex and include many intermittent drainage paths. The typical profile is identical to the others in the Alford Series, and it shares the same fertility, content, and acidity. Naturally, runoff is more rapid in this soil type and erosion can be a problem when natural cover is missing (Haagen 1990).

Baxter Gravelly Silt Loam, 20 to 30 Percent Slopes

The Baxter Series is a group of well drained, moderately steep soil on sideslopes and ridgetops of karst limestone uplands with irregular and convex slopes. The typical profile of Baxter Gravelly Silt Loam, 20 to 30 Percent Slopes is topped with 6 inches of dark yellowish brown cherty silt loam overlying 8 inches of a strong brown very cherty silty clay loam. A red silty clay underlies that to a depth of 30 inches, followed by red clay to 63 inches, or limestone bedrock. Fertility, organic content, and permeability are medium, runoff is rapid, and acidity is high.

Crider Silt Loam, 6 to 12 Percent Slopes

The Crider Series are found on ridgetops and side slopes and in karst areas. They consist of fine silty loam over silty clay loam and silty clay formed in loess, with the underlying residuum formed from limestone. Crider Silt Loam, 6 to 12 Percent is a sloping, deep, well drained soil in bands on upper parts of hillsides and ravines, and in blocks in karst areas. The Permeability of this soil is moderate, and the root zone is deep. The plow layer is loamy and has good tilth, and is moderately to strongly acid. A representative profile is described as being topped with an 8 inch (20.3 cm) stratum of brown silt loam (cf. 10YR 4/3), with a subsoil of brown (cf. 10YR 5/3) to reddish brown (cf. 5YR 5/3) silty clay loam to 38 inches in depth. Below that is a firm, plastic red clay extending to bedrock, some 50 inches below surface, but varying (Arms, et al. 1979: 15; 72).

Crider Silt Loam, 12 to 20 Percent Slopes

This is a moderately steep, well drained soil in bands on upper parts of hillsides and ravines, and in blocks in karst areas. Characteristically, slopes are convex with varying steepness, dismembered drainageways frequently leading to depressed openings into underground streams. Permeability of this soil is moderate to fair, and the root zone is usually quite deep. A representative profile is described as being topped with an 8 inch (20.3 cm) stratum of brown silt loam (cf. 10YR 4/3), with a subsoil of brown (cf. 10YR 5/3) to reddish brown (cf. 5YR 5/3) silty clay loam to 38 inches in depth. Below that is a firm, plastic red clay extending to bedrock, some 50 inches below surface, but varying (Arms, et al. 1979: 16).

Garmon Silt Loam, 25 to 60 Percent Slopes

The Garmon series are fine-loamy, moderately deep, well drained soils found on hillsides and valley walls. They are formed over time as a residual from limestone and siltstone. Garmon Silt Loam, 25 to 60 Percent Slopes is a soil type within the series, described as steep to very steep, moderately deep, well drained soil on hillsides, valley walls, and in bands across ridges and valleys. A representative profile displays a 4 inch (10.2 cm) top stratum of very dark grayish brown (10YR 3/2) silt loam over a stratum of brown (10YR 5/3) silt loam 6 inches (15.2 cm) thick. A yellowish brown (10YR 5/6) shaley silt loam subsoil extends another 11 inches (28 cm). Between the subsoil and a limestone and shale bedrock is an 11 inch substratum of dark yellowish brown (10YR 3/4) shaley silty clay loam.

Garmon Rockland Complex, 25 to 60 Percent Slopes

This soil type is mapped along the steep escarpment at the extreme northeast end of Hunting Area 4 overlooking Tioga Creek and the Ohio River floodplain. It occurs naturally, but the man-made rocky cliff overhanging Highway 31W is also mapped in this unit. This soil complex is described as very droughty, acid, shallow soil, with roughly 50 percent or greater rock inclusion. They are very shallow to bedrock, and include areas where bedrock is exposed without topsoil. These soils are generally associated with the Ventrees soils in Hunting Area 4, and Caneyville and Waynesboro soils elsewhere in the county (Haagen 1990:74).

Hosmer Silt Loam, 2 to 6 Percent Slopes

This is the only soil representing the Hosmer Series, which are deep, well drained to moderately well drained, gently sloping soils on narrow ridgetops. Slopes are smooth and slightly convex. The typical profile begins with a stratum of brown silt loam of about 9 inches overlying a yellowish brown to strong brown silty clay loam to 25 inches. Below these is a dark yellowish brown silty clay loam fragipan to about 5 feet of depth. It is a strongly acid soil with medium fertility and available water capacity. Permeability is moderate above the fragipan, and slow within it (Haagen 1990).

Vertrees Silt Loam, 20 to 30 Percent Slopes

The Vertrees Series consists of deep, steep, well drained soil bands on hillsides and in karst areas. This type is the only one of the series mapped within Hunting Area 4, and is described as having slopes that are convex. Depressions are common, and drainages are dismembered and lead through openings in depressions into underground streams. The typical profile upper stratum is a dark grayish brown (10YR 4/2) silt loam over light brown (cf. 7.5YR 6/3) silt loam to 6 inches (15.2 cm), and contains about 8 percent by volume fragments of chert. The subsoil is a strong brown (7.5YR 5/6) silty clay loam over yellowish red (cf. 5YR 5/6) to red (cf. 2.5YR 5/6) clay with brown mottling.

FLORA

Kentucky is within the Deciduous Forest Formation of eastern North America. Fort Knox is in the part of Kentucky classified as the Western Mesophytic Region which characterized by a wide variety of upland forest types, and is transitional between Mixed Mesophytic and Oak-Hickory Forest regions. The virgin forests that were found by the

first Euroamerican settlers to enter the Mississippian Plateau included some expanses of tall grass prairie that were relict stands from interstadial or postglacial times. Abandoned after farming, these small patches of prairie grow back as woodlands (Wharton and Barbour 1973:12;15;21).

The present tree cover consists of Oak-Hickory type which comprise at least 60% of the dominant and codominant tree cover. This group of trees occurs almost entirely on ridge tops and south slope sites. The balance of tree growth consists of mixed hardwoods, not qualifying for any definite type, found primarily in coves and on north slope sites. Principal species include Black cherry (*Prunus serotina*), American elm (*Ulmus americana*), Red maple (*Acer rubrum*), Sugar maple (*Acer saccharum*), Black walnut (*Juglans nigra*), Yellow-poplar (*Liriodendron tulipifera*), White ash (*Fraxinus americana*), American beech (*Fagus grandifolia*), Black locust (*Robinia pseudoacacia*), White oak (*Quercus alba*), Black Oak (*Quercus velutina*) and Shagbark hickory (*Carya ovata*). On the alluvial bottom land along creeks and rivers, the principal species include Sycamore (*Platanus occidentalis*), Black willow (*Salix nigra*), Black gum (*Nyssa sylvatica*), Sweet gum (*Liquidambar styraciflua*), and Eastern cottonwood (*Populus deltoides*). Elm, Soft maples, Oaks, Sassafras, and Hickories can be dominant in some areas.

The understory is comprised of dogwood, redbud, holly, hophornbeam, and magnolias. Understories tend to dominate around clearings. Shrubs beneath those include witch hazel, spicebush, pawpaw, and wild hydrangea. Numerous herbs and smaller plants abound in the understory and clearings including violet wood sorrel, yellow lady's slipper, bloodroot, larkspur, trillium, violets, everlasting, shooting-star, cinquefoil, mandrake, toothwort, ipecac, flowering spurge, prairie-tea, false aloe, sunflower, and horsemint (Shelford 1963:34).

The Fort Knox reservation supports a good stand and growth of other kinds of vegetation. On the more intensely used areas on the inner post, Kentucky Bluegrass, Chewing Fescue, and Tall Fescue are the predominant existing species. On land outside the cantonment area vegetation varies widely, with small bushes of many species, and an undergrowth of weeds, vines and briars on the level to rolling land together with an introduced cover of Fescue, Korean lespedeza and Ladino clover where land has not been seeded recently. Several acres of Kentucky Bluegrass exist on the northern portion of the reservation in the open, well drained bottoms near West Point, Kentucky. Noxious weeds which have been identified are Giant Foxtail (*Setaria glause*), Johnson Grass (*Sorghum halpense*), Wild Garlic (*Allium canadense*), Bermuda Grass (*Cynodon dactylon*) and Bull Thistle (*Cirsium vulgare*). All of these are found in scattered areas throughout the installation with the exception of Bermuda Grass, which is found primarily in the cantonment area.

FAUNA

The principal mammalian wildlife species frequently seen within the bounds of Fort Knox include white-tailed deer (*Odocoileus virginianus*), Eastern chipmunk (*Tamias striatus*), Gray Squirrel (*Sciurus carolinensis*), Fox Squirrel (*Sciurus niger*), Red Squirrel (*Tamiasciurus hudsonicus*), Eastern Cottontail Rabbit (*Sylvilagus floridanus*), Raccoon (*Procyon lotor*), Opposum (*Didelphis virginiana*), Muskrat (*Ondatra zibethicus*), Woodchuck (Groundhog, Whistle-pig) (*Marmota monax*), Stripped Skunk (*Mephitis mephitis*), Red Fox (*Vulpes vulpes*), Gray Fox (*Urocyon cinereoargenteus*), Coyote (*Canis latrans*), Beaver (*Castor canadensis*), Muskrat (*Ondatra zibethica*), and River Otter (*Lutra canadensis*). Small mammals like moles, and sundry rats, mice, voles, and bats exist in large numbers but are unseen by the casual hiker. Historically, Bison (*Bison bison*), Elk (*Cervus canadensis*), Black Bear (*Ursus americanus*), Bobcat (*Lynx rufus*), and Wolf (*Canis lupus*) were common.

Principal bird species seen at Fort Knox include: Red-tailed Hawks (*Buteo jamaicensis*), Sharp-shinned Hawks (*Accipiter striatus*), Killdeer (*Charadrius vociferus*), Pigeon (Rock Dove) (*Columba livia*), Great Horned Owls (*Bubo virginianus*), Whip-poor-will (*Caprimulgus vociferus*), Ruby-throated Hummingbirds (*Archilochus colubris*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Pileated Woodpecker (*Dryocopus pileatus*), Wild Turkey (*Meleagris gallopavo*), Northern Bobwhite Quail (*Colinus virginianus*), Common Crow (*Corvus brachyrhynchos*), Mourning Dove (*Zenaidura macroura*), Turkey Vulture (*Cathartes aura*), and Great Blue Heron (*Ardea herodias*). A large number of resident and migratory waterfowl and cranes are found in the larger drainages of Fort Knox including Wood ducks (*Aix sponsa*), other ducks and teals (*Anas* spp.), Canada Geese (*Branta canadensis*), and Sandhill Cranes (*Grus canadensis*). Bald Eagles (*Haliaeetus leucocephalus*) can be seen occasionally along the Ohio River. A large number of resident and migratory song birds and other small birds also utilize the forests and fields of Fort Knox. Indians and early white settlers would have also seen the Passenger Pigeon (*Ectopistes migratorius*) which are now extinct, and the Raven (*Corvus corax*). Although the crow is common now, the larger raven was said to be more common in early Kentucky and Tennessee, but is rarely seen this far west of the foothills of the Appalachian Mountains (Ganier 1974:14).

Vertebrate fish species in the streams and lakes (man-made) at Fort Knox include Bass (*Micropterus* spp.), Catfish (*Ictalurus* spp.), Crappie (*Pomoxis* spp.), Carp (*Cyprinus carpio*), Creek Chubs (*Semotilus* spp.), and Longnose Gar (*Lepisosteus osseus*). Fishes common in the Ohio River and the lower reaches of tributaries that flow into it also include Bowfin (*Amia calva*), Buffalo (*Ictiobus* spp.), Redhorse (*Moxostoma* spp.), Walleye and Sauger (*Stizostedion* spp.), and other Perches (*Perca* spp. and *Percina* spp.), Sunfish (*Lepomis* spp.), and Freshwater Drum (*Aplodinotus grunniens*). Invertebrate aquatic animals like Crawfish and numerous genera of Unionacean freshwater clams can be found in the larger streams and tributaries of the Ohio River.

Principal reptile and amphibian species include Snapping turtle (*Chelydra serpentina*), Painted turtle (*Chrysemys picta*), Eastern box turtle (*Terrapene carolina*), Five-lined skink (*Eumeces fasciatus*), Ground skink (*Scincella lateralis*), Rat snake (*Elaphe obsoleta*), Common garter snake (*Thamnophis sirtalis*), Timber rattlesnake (*Crotalus horridus*), Copperhead (*Agkistrodon contortrix*), Leopard Frog (*Rana pipiens*), Bull Frog (*Rana crasidens*), and the American toad (*Bufo americanus*). Large and small snakes, poisonous and non-poisonous, aquatic and terrestrial, abound in the warmer months. Smaller reptiles such as lizards, skinks and small snakes are common as well, particularly in insect-rich areas. Salamanders, newts, tree frogs, cricket frogs, leopard and bull frogs can all be found in the moist areas of plugged sinkholes, and below seeps and springs and poorly drained areas.

III. CULTURAL OVERVIEW

PREHISTORIC OVERVIEW

The prehistoric era in the southeastern United States is traditionally divided into four major periods: Paleoindian, Archaic, Woodland, and Mississippian. Each of these periods is defined by characteristic artifact assemblages and patterns of subsistence and settlement, in other words, their way of life. Different regions in the Southeast do display some variability in these traits for a given period, and the accepted points in time which separate these periods vary from state to state somewhat.

The following discussion summarizes the major trends for these four major periods following several syntheses in recent published papers, emphasizing the region including Fort Knox. The interested researcher is referred to those listed in the section of cited references, but particularly *The Archaeology of Kentucky: Past accomplishments and Future Directions*, published in 1990 by the Kentucky Heritage Council. Most of the citations here are included in that two volume work.

Paleoindian Period, ca. 12,000-8,000 B.C.

The Paleoindian period (ca. 12,000-8,000 B.C., for the region, 9,500-8,000 B.C. for Kentucky) represents the earliest known human occupation in the Americas. The placement of these occupations in the terminal Pleistocene indicates an adaptation to cooler climatic conditions and different physiographic regimes than found in the modern Holocene. Aboriginal groups of this period were likely small, mobile bands dependent upon a hunting and gathering economy. Although many sites prove that they hunted some of the Pleistocene megafauna¹, it is likely that their subsistence base was varied and included a number of plant and animal foods. Their toolkits included bone and antler tools for piercing and scraping hides, but these are only occasionally preserved. The major diagnostic artifacts of the Paleoindian period are lanceolate, fluted² Clovis points.

For Kentucky, Tankersley (1990) has divided sites from the Paleoindian period into two temporal phases: early Paleoindian (9,500-8,500 B.C.), and late Paleoindian (8,500-

¹ a term for large, extinct animals such as mastodon (*Mammot americanum*), ground sloth (*Megalonyx* spp.) and an extinct form of bison (*Bison antiquus*).

² Fluted points have been thinned by removing a long flake, usually from each side, that extends from the base to around the mid-point of the long, lance-shaped point.

8,000 B.C.), based in large part on projectile point types. The earlier points are the large, fluted points identical to those found at coeval sites across North America. Some are the now-famous Clovis points, or members of the "Clovis cluster", others have a regionally distinctive "fish-tailed" appearance, and are given the name Cumberland points.

Many sites are associated with the killed and butchered remains of megafauna. A few megafauna kill sites have been found in Kentucky; the closest known site to Fort Knox at present is the Big Bone Lick, in the Louisville vicinity. Far fewer habitation sites have been discovered, partly because these people were nomadic hunter-gatherers; none are known for the Fort Knox area as yet, but can be reasonably expected to be found here. In fact, of only seven sites east of the Mississippi River having good chronometric dates, two are in Kentucky: Big Bone Lick (one date, B.C.: 8,650 +/- 250), and Enoch Fork Rockshelter (two dates, B.C.: 9,010 +/- 240; and 11,530 +/- 350) (Tankersley 1990:80-81).

The Late Paleoindian period represents adaptations to a changing environment, as the Pleistocene megafauna give way to modern species, and Kentucky's climate and vegetation shift dramatically. Spruce and pine forests covering this area give way to mixed hardwood forests populated by modern bison and deer, and small mammals like raccoon and cottontail, and birds like turkey and quail. The changes were not occurring overnight, but were a gradual blurring of one way of life to another, spread over two thousand years.

These changes have parallels in the toolkit of the human population. Late Paleoindian points are like those of the earlier phase, but they lack fluting. These points are assigned to two stylistic clusters by Kentucky archeologists, Lanceolate Plano and Dalton. This period is considered to be transitional between the Paleoindian and Archaic traditions, and, in terms of chronological placement, it is often considered either terminal Paleoindian or Early Archaic.

No well-dated Late Paleoindian period sites are known in Kentucky, and three of the four dated sites cited as being in the Eastern United States are rockshelters in Missouri (source: Goodyear 1982, quoted in Tankersley 1990:92). The fourth site is also a rockshelter, but in Alabama. However, two less well-dated sites associated with artifacts from this period are near Fort Knox. The Howe Valley Rockshelter (15Hd12) lies along a steep ridge overlooking a karst plain in Hardin County; it was dated by association with four Dalton cluster projectile points. The Longworth-Gick site (15Jf243) is a stratified multicomponent site on the floodplain of the Ohio River. Its lowest strata contained fluted points dating to the Early Paleoindian period (Tankersley 1990:112). Similar landforms and rockshelters can be found at Fort Knox, but none have been tested for the presence of Paleoindian deposits.

Archaic Period, ca. 8,000-1,000 B.C.

The Archaic period lasted from about 8,000 B.C. to 1,000 B.C. It is usually divided into the Early Archaic (8,000-6,000 B.C.), Middle Archaic (6,000 -3,000 B.C.), and Late Archaic (3,000-1,000 B.C.). The placement of the two breaks at 6,000 B.C. and 3,000 B.C. is approximate and a compromise of convenience, as there is some contention on the subject.

The transition from the Late Paleoindian to the Early Archaic period was marked by the beginning of the Holocene period and the evolution of a new regime of fauna and flora. In contrast to Paleoindian adaptations, the Early Archaic appears to have represented a shift to a more localized subsistence strategy based on seasonal harvest of plant and animal resources. Similar to earlier occupations, Early Archaic sites tend to be ephemeral scatters, reflecting a mobile lifestyle by small groups. Diagnostic projectile point types for this period vary somewhat by region, but include corner notched, bifurcated, and stemmed forms.

The Middle Archaic period represented a period of increasing localized exploitation of the resource base, and expanded efficiency in the utilization of terrestrial and riverine resources. Population levels seem to have significantly increased, judging from the greater number of recorded sites. Large, intensively occupied sites appear for the first time in the archeological record throughout the Southeast. Smaller camp sites are also commonly found. Woven footwear and basketry are used. Some interregional exchange of "exotic" goods such as copper artifacts also occurs during this period.

The Late Archaic period continued the development of more sophisticated adaptations to localized resource zones. The large number of sites documented for this period suggests that the population levels continued to increase. The use of cultigens becomes widespread during this period; archeological evidence mounts for the use of both native seed plants and tropical species (squash, gourd), while much of the protein still comes from hunting deer, turkey, raccoon, and smaller animals. Heavy steatite (soapstone) bowls were also used during the Late Archaic, suggesting an increasingly sedentary lifestyle.

Archaic sites are fairly widespread in Kentucky. Major river valleys have contributed a number of important sites, including those found in the Taylorsville Reservoir on the Salt River east of Fort Knox (Jefferies 1990:185-188). The Salt River saw an increase in human population during the Archaic, especially the Late Archaic. The most common site types are called open habitations, which brings to mind a small village or, at least, a cluster of dwellings. The larger sites tend to be along large drainages.

Other smaller drainages should contain proportional numbers of Archaic sites, if smaller. Based on surface surveys of approximately one fourth of each hunting area, O'Malley's analysis shows that most of the 37 prehistoric sites that can be roughly dated are assigned to the Archaic period, 32 in all, and 28 of those are described as Late Archaic/Early Woodland. About the distribution of Late Archaic/Early Woodland sites at Fort Knox, she says:

The base camps were probably reoccupied through time and were the loci of many varied activities. They may also have supported higher population densities for longer periods during an average year than did the smaller sites. The sites located away from the major rivers appear to have been used primarily for procurement of various resources, such as game, wild plant foods and chert. These sites were not necessarily reoccupied although the general vicinity may have been revisited from year to year (O'Malley 1980:444).

Woodland Period, ca. 1,000 B.C.-A.D. 700

The Woodland period in Kentucky has also been divided into three segments, following Railey (1990:249): the Early Woodland (1,000-200 B.C.), Middle Woodland (200 B.C.-A.D. 500), and Late Woodland (A.D. 500-1000). The marker that distinguishes the Early Woodland period from the Late Archaic is the presence of pottery. Beyond this addition to the material assemblage, the Early Woodland lifestyle appears to have been quite similar to the Late Archaic, but pottery, not being very portable, suggests a more sedentary village lifestyle.

The earliest pottery in the southeast occurs earlier than that found in Kentucky, and is restricted to the tidal marshes and mixed woodlands (not the pine barrens) from east-central Florida north through coastal Georgia. This thick pottery is distinctively fiber-tempered. It is thought that the relatively rich near-coastal ecosystems engendered a nearly sedentary lifestyle, allowing the adoption of non-portable material goods like pottery. The wide-ranging Indians of Kentucky probably knew about pottery centuries before they made it.

The first pottery in Kentucky occurs much later, and is tempered with fairly coarse fragments of lithic material. Its form resembles the heavy soapstone or steatite bowls that it replaced (Railey 1990:249). Railey also cites other technological differences between the Late Archaic and Early Woodland periods. Two of these are ungrooved mauls which replaced grooved axes, and hafted end-scrapers of the Late Archaic (made from recycled projectile points) which were replaced by bone "beamers", chisel-shaped hide working tools made from the long bones of deer (Railey 1990:248).

Two place names from the middle Ohio Valley have become associated with the Woodland period, Adena and Hopewell. Excavated near the turn of the century, Adena

has been widely accepted as the type site for Early Woodland, and Hopewell for Middle Woodland. This complicates matters somewhat since not all Early Woodland sites are Adena, and not all Middle Woodland sites are Hopewell. Excavation reports of such sites in Kentucky from the 1930s through the 1950s compare the Kentucky sites and artifacts to Adena or Hopewell and date them accordingly, but scholars now do not see the Kentucky Woodland in such black and white terms. Adena-like sites are often found with Hopewell-like artifacts or features. But Adena is considered to typify the Early Woodland, and the Middle Woodland is typified by Hopewell (Railey 1990:252-254).

The differences between these two are not so great as between the Archaic and Woodland, of course. Adena villages contain small, circular habitations, some larger, elliptical enclosures, and one or more burial mounds. Excavations have shown that mounds frequently represent an accumulation of burials and soil mass over a long period of time.

Examples of artifacts found at Adena sites begin with limestone tempered ceramics. Sandstone tempering is also found. The typical vessel shapes vary, bottoms can be flattened or rounded, sides can be straight or flared, and rims can be folded or thickened with a strip of clay. The outside is usually plain and undecorated, but occasional sherds with incising or stamping are found, but Railey (1990:253) calls these "non-local ceramic types." Railey also lists "stone gorgets and pipes, celts, simple and engraved tablets, galena and barite artifacts, bone and shell tools, copper bracelets, rings, and beads, and mica crescents" (Railey 1990:253). Chipped stone projectile points are distinctively notched and stemmed; (type names include Kramer, Sade, Keel, Savannah River, Gary, Adena, Turkey-tail, Greeneville, Camp Creek, and Nolichucky)(Railey 1990:250).

The Middle Woodland period witnessed the emergence of widespread exchange and trade networks throughout the Southeast and Midwest, involving a number of raw materials and finely crafted finished goods. A large number of large Hopewell mound sites occur within major drainages, many containing burials associated with a wealth of imported goods, including copper, mica, and shell artifacts. Railey offers a lengthy description of the Middle Woodland, breaking it down into two more groups (Railey 1990:251-256); but, since such subdivisions have not been described for Fort Knox, the highlights should be adequate here.

During the Middle Woodland, pottery decoration broadened to include limestone tempered check stamped, simple stamped, plain, and complicated stamped ceramics. Projectile points shift to flared stems, side notching, and other characteristics not seen before, (type names include Steuben Stemmed, Lowe Flared Base, Chesser Notched, and Bakers Creek). Mounds frequently represent the burial of one individual, and grave goods appear to signify status. In fact, status differentiation can be seen in various ways, and a more intense and wide-ranging trade network can be seen in some of the artifacts made with mica, copper, and obsidian (Railey 1990:251-254).

The Late Woodland period marks a transition period of about 500 years between the wide-ranging "Hopewellian Interaction Sphere", as archeologists have termed the Middle Woodland, and the complex agrarian villages of the Mississippian Period. The elaborate ceremonialism, trade networks, and mound building associated with Middle Woodland times appear to have nearly died out by A.D. 500. The initial changes are reflected in nearly every aspect of culture: ceramic vessels are less diverse in form and cord-marking is the predominant decoration; projectile points are mostly expanded stem or side-notched; mounds are no longer common. Many sites are small habitations in the open or in rock shelters, indications of seasonal breaking up of larger bands into smaller foraging units. Yet, for part of each year, these people gathered into village communities with reliance on native plants and animals for their subsistence (Railey 1990:256-257).

The last two hundred years of the Late Woodland in Kentucky, roughly A.D. 800-1000, saw more variability of ceramic styles, social organization, and subsistence strategies. Small triangular projectile points are seen as the first evidence of the bow and arrow. Importantly, horticulture, if not full agriculture, based on maize (corn) and other non-native plants becomes an important part of the diet.

Based on surface collections, O'Malley, et al. (1980) identified three sites as Woodland habitations from the presence of diagnostic artifacts. A chert-tempered sherd was found with a number of lithic artifacts at 15Bu358; this is in Hunting Area 38, on Arnold Flats overlooking the Salt River. This site has not been tested, but it contains an historic farm house and outbuildings, and may be heavily disturbed. It has not been examined at this time. Site 15Md152, in Hunting Area 1 near the Ohio River, contained Adena-like projectile points among a large number of lithic fragments and artifacts. But shovel testing in 1992 confirmed that this area had been disturbed to a depth of more than half a meter by over two decades of tank training. Site 15Hd229, in Hunting Area 85 on a terrace overlooking Mill Creek, produced Adena and Steuben points and two chert-tempered sherds. A preliminary examination with shovel tests in 1992 showed that this site had also been heavily, if not completely disturbed. The 1980 report also one located one small earthen mound in Hunting Area 80 which may date to the Woodland.

Mississippian Period, ca. A.D. 900-1540

The Mississippian period (ca. A.D. 900-1540) witnessed the development of the most complex sociopolitical systems in North America. The widespread construction of ceremonial earthworks, settlement system networks, and the reemergence of long distance exchange systems attest to the development of hierarchical societies, or chiefdoms. Maize, beans, and squash became the primary cultigens throughout much of the Southeast, providing crops more amenable to intensive use than the native starchy and oily seeds and nuts that were favored during the Woodland period (Lewis 1990:375-377).

Medium to large villages with an agrarian economy require the best arable land, so it follows that the best-known sites from this period lie in the fertile bottomlands of the Mississippi and other major rivers; certainly the largest ceremonial mounds and villages are found there. Although larger Mississippian sites are only known for areas well away from Fort Knox, smaller sites from the same period may exist within the boundaries of Fort Knox. Many of the floodplain areas along the Salt and Rolling Fork Rivers have not been examined. Granger, et al. (1981) lists 29 Mississippian sites in the Salt River Management Area upstream from Fort Knox (Lewis 1990:437), so it is reasonable to expect similar sites within Fort Knox. The survey reported in O'Malley, et al. (1980) did not turn up any new Mississippian sites, but a fairly large, conical mound in Hunting Area 6 (15Hd273) may date to the Mississippian period; any habitation areas associated with the mound have not been located yet. On the opposite side of Fort Knox, two Mississippian era mounds comprise a site (15Hd42) overlooking the Rolling Fork River. This site lies southeast of Fort Knox and northeast of Elizabethtown.

For southern Ohio and eastern Kentucky, there is another entry in the culture sequence called Fort Ancient. Since none of the sites identified as Fort Ancient have been reported near Fort Knox, and the distribution of known sites centers in the eastern part of the state, a brief summary will be sufficient discussion. Fort Ancient is roughly contemporaneous with the Mississippian period and appears to be a local variation of that lifeway centering on the upper Ohio River. In overview, a Fort Ancient village is much like any other Mississippian village. Differences lie in the pottery decorations, a higher percentage of bone tools, a village pattern that is circular or oval around a central plaza, and other details. Some villages are fortified. For a more complete discussion of Fort Ancient sites and cultural contrasts with other groups from the same period, refer to the summary articles such as that by William E. Sharp (1990), or Henderson and Turnbow (1987).

Contact Period, ca. A.D. 1540-1795

The best and, perhaps, the only work synthesizing the Contact Period in the region focuses on northern and eastern Kentucky, just missing the counties in which Fort Knox lies (Henderson, Jobe, and Turnbow 1986). The general observations and definitions presented in that study apply well to peripheral counties and have been adopted here. Their bracket of time for the Contact Period begins when the first indirect effects of the European presence were felt by native cultures, roughly A.D. 1540. The beginning date was selected based on journals of the De Soto expedition in the 1540s observing that trade goods and European disease were there before them. The signing of the Greenville Treaty in 1795 is taken as the terminus for this period, since by that document the Indians relinquished all claims to land in the region to the new government of the United States. The several tribes in various stages of acculturation scattered to small reservations to the north and west (Henderson, Jobe, and Turnbow 1986:1;17).

The synthesis by Henderson, et al., breaks the Contact Period into two segments. The earlier is called the Protohistoric Period, and spans nearly two centuries, ending at A.D. 1730. The inhabitants of the region during this period probably consisted of diverse groups speaking Algonquian or Iroquoian languages, and basing their economies on a combination of horticulture and fishing, hunting, and gathering. Small encampments at scattered locations would coalesce into larger villages on floodplains in the Spring for the cultivation of corn, beans, squash, and a few other selected plants, like tobacco.

During this period, access to the region by Europeans was almost exclusively from the south by the Spanish in Florida (which extended into present-day Georgia and Alabama), and later from the north by the French in Illinois, who wrote of the Shawnee living on the Ohio. The few surviving descriptions of inhabitants are indirect and sketchy. Much of what is specifically known centers on archeological investigations at late Fort Ancient sites on or near the Ohio River. Archeological studies of a late Fort Ancient site in Greenup County yielded classic prehistoric artifacts in association with European trade goods, beads, jewelry, and trinkets, dating from 1550 (+/-50) to 1675 (+/-5) (Henderson, Jobe, and Turnbow 1986:11).

Increasingly, disease reduced populations among native inhabitants all over the central and eastern parts of the continent during this time. In this region, epidemics are documented from the last decades of the 1500s and into the mid-1600s. Also, wars enveloped most inhabitants during the mid-1600s over fur trade competition, the so-called "Beaver Wars", through which the Iroquois Confederacy overwhelmed many lesser groups. Some small groups of Shawnee or other tribes may have remained in the Ohio region at the end of the Protohistoric Period, but many more had left or were killed off by disease or war.

The later sixty-five year segment of the Contact Period proposed by Henderson, et al., is called the Historic Indian Period, from about 1730 to 1795. The onset is marked by a resurgence of populations by peoples not originally from this area. The Miami and Wyandot from the north established villages on the Ohio River. Some Shawnee and Delaware were pushed in from English areas to the northeast, and small groups of Mingo, probably a faction of Seneca, mingled into established villages (Henderson, Jobe, and Turnbow 1986:14-15). But their hold on the land proved untenable over time as they resisted white settlement first by siding with the French in the French and Indian War (1754-1763), which they lost, and then siding with the English in the American Revolution. Attacks continued after the Revolution against settlers until the Battle of Fallen Timbers in 1794, when a confederation of tribes was defeated. The ensuing Greenville Treaty (1795) ceded all lands in the region to the United States and displaced Indian populations to the north and west (Henderson, Jobe, and Turnbow 1986:17).

HISTORIC OVERVIEW

Historic Settlement (1795 - 1918)

Following the American Revolution, land grants for war service gave impetus to the settlement of the frontiers west of the barrier mountain ranges which had formed a virtual parapet from Pennsylvania to Georgia. At a time when natural water courses were the principal highways, lands along the Ohio River were prized. The first explorers and settlers to the region actually preceded the 1795 terminus for the Contact Period. For example, Squire Boone, Daniel Boone's brother, explored the Rineyville area, and three men (families?) set up fortified cabins at what was to become Elizabethtown in 1779. Numerous others are known to have passed this way while exploring down the Ohio River. The first caucasian settlement on record was made by Samuel Pearman and a group of settlers who started clearing and farming on the Ohio at the mouth of the Salt River in 1776, but Indians drove them off in a few months. Pearman returned with a grant for 1000 acres along the Salt River in 1789, when West Point was established (Briggs 1955:7). A salt works was set up along the Salt River in or near the present boundaries of Fort Knox which was attacked by Indians in 1788. The locally famous Battle of the Salt Kettles resulted in the deaths of 11 of the 12 white men working there. Henry Crist hid and survived, and a white woman was captured (Winstead 1989:16).

After 1795, settlement steadily grew centering first on watercourses, then expanding to encompass the region. Kentucky became a state in 1792, and Hardin County was formed out of Nelson County at that time. Meade County was formed in 1823 out of Hardin and Breckenridge Counties. Populations steadily grew, but the region was no longer a frontier; the frontier had moved far to the west, and the local area settled into generation after generation of agricultural life. Support industries grew along with farming and herding; mills were built along most streams and some became the focus for settlements. Steamboats began plying the Ohio in 1811 and were the primary transport for interstate commerce soon afterwards. The Louisville and Nashville Turnpike began in the 1830s and passed through the present site of Fort Knox, and saw heavy traffic. Railroads began competing with both the steamboat and turnpike in the 1850s.

Unlike their compatriots just across the Ohio River, the Kentucky farmers inherited an economic system based on slavery. Subsequent to the Civil War, the way of life as locally practiced probably changed in significant ways for both landowners and former slaves, though not as greatly as they had for more slave-dependent regions further south. There were few great plantations to break up, and those were on flood plains of the larger rivers. These probably accounted for most of the slaves in the region. Yet, this region of Kentucky generally held confederate sympathies, and the Union fort established near West Point in 1861 was to some extent an occupation force. Confederate forces under John Hunt Morgan captured over 600 troops there in 1862 after a siege. Morgan again passed through the area in 1863 enroute to Brandenburg, where his troops clashed

with Union forces. Two other raids are reported for a guerilla band under a local "activist" named Ben Wigginton which hit certain merchants of Pitts Point and West Point for dealing with the Union; Wigginton was badly wounded at West Point on January 20, 1865 (Collins 1878:153; O'Malley et al. 1980:37-38).

After the war, available documents show little change in the Hardin, Meade, and Bullitt County area. Obviously, slavery no longer existed, but there is no evidence for a mass exodus of former slaves. The 1870 census of Hardin County, which lists the race and occupations of those being counted, shows scattered African-American families in the population (Deardorff 1983:231-236).

The years up to the turn of the century record little change other than that common to the rest of the country. Some industries began to flourish, but in modest proportions. A brick factory and a chain factory opened in West Point. An iron ore operation started at Iron Mountain near the northwestern extent of what is now Fort Knox, but it soon failed, reportedly caused by a diversion of efforts and funds to mining a thin streak of gold. A new railroad opened between Louisville and points west, running through West Point and along the southern bank of the Ohio River. Another, the Illinois Central, passed through West Point and ascended the slope of Muldraugh Hill to Muldraugh, Stithton, and points south. These combined to give as many as 14 trains a day through West Point, which opened up daily connections with Louisville and helped find new markets for local dairy farmers, fishermen, and others.

In 1903, the Army established a tent camp in the flats south of West Point for maneuvers and artillery training. Some of the training apparently took place on the high ground north and northeast of Stithton. Near the end of World War I, both sites were studied for construction of a permanent training facility, and, in 1918, construction began for water, sewer, rail, and road connections necessary for Camp Knox around the town of Stithton.

History of Fort Knox, 1918 to the present

On 25 June 1918, \$1.6 million was allocated to purchase 40,000 acres; and in July, construction began on the camp facilities. However, the signing of the Armistice, and reduction of the Army during 1921-1922, curtailed construction activities. The camp was then closed as a permanent installation. From 1922-1932, the camp was used primarily as a training center for the Fifth Corps area, reserve officers, Citizens Military Training Camps (CMTTC) and national guardsmen. In 1925, it was designated as Camp Henry Knox National Forest; but this status was terminated in 1928 and two infantry companies were then assigned to the camp.

Fort Knox has been closely identified with Armor and the Armored Forces. The United States established a Tank Corps in 1918 to accompany the American

Expeditionary Forces to Europe and used tanks as the spearhead element in the engagement in which they participated. However, their inherent force and capabilities were diluted by being employed in long, thin, scattered lines. In 1920, the Tank Corps was abolished as a separate branch and all armored vehicles were assigned to the Infantry. After World War I, the British continued to employ mechanized forces and this was the impetus for the U.S. Army to mechanize and develop its Armored concept. In 1929, the War Department decided to organize a mechanized force and funds were appropriated to implement mechanization. LTC Adna R. Chaffee was directed to develop the armored concept and to conduct the initial maneuvers. The Armored Force was organized as an experimental force, but with the idea of it becoming an integral part of the Army. The War Department centralized the mechanization into the two combat arms they thought could best exploit Armor's capabilities, Infantry and Cavalry, and gave Cavalry the specific mission of developing the mechanized force.

Both branches used the tank as an additional weapon; but Cavalry substituted the machine for the horse and utilized it in what had been Cavalry's traditional missions; reconnaissance, pursuit, envelopment and exploitation. The first commander of the Armored Force was Colonel Daniel Van Voorhis; and Fort Eustis, Virginia was selected as the site for the experimental force. However, as Colonel Van Voorhis and General Chaffee discovered, the area lacked the necessary maneuver terrain. They both felt the size and varied terrain of Camp Knox was more suitable for organizing and training the "Mechanized Cavalry Brigade". In November 1931, the first elements of the Armored Force began moving into Camp Knox and it was here that the new vehicles and concepts were tested. The Third Army held mechanized maneuvers in Georgia and Louisiana in 1940 in what has become known as the "Louisiana Maneuvers". This was the first real test and evaluation of the mechanized force. However, it was apparent that the traditional Cavalry and Infantry tactics had been used and that the special capabilities of the armored vehicles were not being utilized. Following these maneuvers, a meeting which included General Chaffee and Colonel George S. Patton, Jr., was held. They decided that the unified development of armored units must be initiated, separated from Cavalry and Infantry, and their use perfected.

The German blitzkrieg of Poland and France led to new thoughts on the use of Armor and provided additional impetus for the formation of additional armored units. On 1 January 1932, Congress designated the installation as a permanent garrison. Later, the Treasury Department selected a portion of Fort Knox as the site for the gold depository; and in 1936, the U.S. Bullion Depository was completed and the first gold shipments arrived at Fort Knox between January and June 1937. The building and adjacent grounds are now under the control of the U.S. Treasury Department. In June 1940, the Armored Force was created with the Headquarters, I Armored Corps; 1st Armored Division; Armored Force Board and a comparatively small Armored Force School centered at Fort Knox. The School and Armored Force Replacement Training Center was officially authorized on 1 October 1940 and their functions were initially combined. Shortly afterwards, on 24 October 1940, they were redesignated as separate units. The School,

now known as the U.S. Army Armor School, trained men in both military fundamentals and specialized areas such as Armor tactics, communications and gunnery. It expanded rapidly as World War II and the need for Armor grew.

The School opened with a cadre of 155 officers and 1,458 enlisted men. The School itself utilized over 500 buildings of the installation. In addition, to increase the number of graduates, classes were started on a weekly basis rather than quarterly. At its peak, the School operated on two daily shifts in order to accommodate the requirements for qualified Armor personnel. During this time, construction activities rapidly expanded the post. In 1940, there were 864 buildings on post; but by 1943, there were 3,820--a rate of 160 buildings a month. By 1943, the total acreage had increased to 106,861 acres. Since then, Fort Knox has remained as the site for the Armor Center, and School. Today, it is a post of 109,064 acres with a daytime population of approximately 45,000 military and civilians. The installation serves over 100,000 persons to include active Army personnel and retirees and their dependents and reserve personnel.

PREVIOUS ARCHEOLOGICAL INVESTIGATIONS

Phase I archeological surveys have been conducted for several projects within the boundaries of Fort Knox in the past twelve years; also, surveys on non-federally owned lands near Fort Knox have been made. Those that lie within two miles of the project area are listed in Table 1. No Phase II or Phase III excavations have occurred within Fort Knox nor have any such excavations occurred nearby. The systematic sampling survey reported by O'Malley, et al. (1980) is the only study in the list that included portions of the study area described in this report. No sites were recorded as lying within HA 4 during that survey. However, it should be noted that site 15Md150 was mapped just inside the boundary of Hunting Area 4 in that report, although it is discussed in the section for Hunting Area 2 (O'Malley et al. 1980:62-63; Figure C-2, page 533).

Table 1. Previous Investigations in the Project Vicinity.

<u>Reference</u>	<u>Size and Location of Project</u>	<u>Number of New Sites Reported</u>
Mueller (1991)	270 a HA 1	4
O'Malley, et al. (1980)	2000 a (est.) HAs 1-6, 16	19
Schenian (1991)	50 a ² HA 17	1
Webb and Brockington (1986)	< 100 a (est.) HAs 8, 10	<u>4</u> ¹
	¹ includes site of Garnettsville	Total 28
	² limited to sites within 2 km radius	

IV. RESEARCH DESIGN AND METHODOLOGY

RESEARCH DESIGN

A fundamental objective of this survey was to develop detailed knowledge of the cultural resources within a defined parcel of Fort Knox that could be combined compatibly with the overall study of Fort Knox made by the University of Kentucky (O'Malley, et al. 1980). This did not require changes in methodology since the UK study was set up along given assumptions that still hold true. The few changes in procedures, regulations, and methodologies that have evolved in the intervening years provided an opportunity to supplement, not change, the UK body of data or the conclusions drawn in 1980.

A second objective was to collect information on sites found beyond that routinely collected at the Phase I level of study. This objective stems from the observation that recommendations in the earlier survey reports for Phase II and higher studies were never carried out at Fort Knox, for unspecified reasons. The excuse has been made that all sites recorded are protected through a policy of site avoidance.

The practice of site avoidance is benign in theory, but carries the potential for destruction of the very sites these studies are initiated to preserve; that is, those that are eligible for the National Register of Historic Places. The information we have on each site found in a Phase I survey is sketchy, and it was intended to be that way. The division of archeological examinations into three levels, or "phases", of examination was created to streamline the process so that the initial survey, or Phase I, would primarily locate sites, and examine sites to the least extent necessary for a basic grasp of each site's areal and chronological position, and its integrity, or degree of disturbance. Phase II examinations, then, are used to examine selected sites which hold the promise of integrity and significant content. A useful by-product of Phase II examinations for the land manager or undertaking director is that it involves a sorting through of sites resulting in the identification of not only the significant ones, but also of those lacking National Register levels of significance as well. In other words, there are fewer sites to avoid.

Site avoidance results in the accumulation of a large number of sites which, within Fort Knox, become obstacles to training. On a military base, when obstacles become too common to avoid, they are not avoided and the "mission" of the base, which is training, is given as the reason. Without Phase II or III studies, we do not even have an understanding of what has been lost; the question, "was it significant or not," remains unanswered.

Then, too, site avoidance is not practiced by all persons empowered to undertake earthmoving activities. The Forestry Section, for whom this study was undertaken, is an exception in that every site recorded by a prior survey is given a wide berth and protected from tree harvesting activities. But large tracked vehicles and bulldozers operate every day at Fort Knox at areas that have never been surveyed, and often at areas that have, without knowledge of or concern for cultural resources.

It is only through Phase II and Phase III examinations that we can gather the very information that makes the contribution to an understanding of history or prehistory which is the underlying purpose of preservation laws. Site distribution analyses are an important contribution of studies of large areas. But, if the analyses are based only on Phase I data, they include a degree of uncertainty, an unknown quantity of error that cannot be addressed or estimated without a program of more detailed examination based on Phase II and III studies.

Therefore, it was an objective of this study to examine any sites found with enough rigor that a National Register of Historic Places nomination form could be filled out without further and separate studies. The stipulation can be added that, if, during the course of the physical examination of each site it becomes apparent that the site does not meet the criteria for eligibility, further examination will not be necessary. Due to the constraints of the number of sites found and the limited time available for assembling a full study, not all the results of the field examinations of each site can be presented in this report, but remain on permanent file at Fort Knox and copies will be given to the Kentucky Heritage Council, and the office of the State Archaeologist. Sites determined eligible will be nominated to the National Register of Historic Places.

METHODOLOGY

Literature Search

Background research included real estate documents and maps on file at Fort Knox (DEH) pertaining to the acquisition of the land in 1918, and again in 1940. A copy of a map dated 1903 was found housed at DEH which also contained pertinent information. Copies of previous cultural resource surveys are also on file at DEH and were studied for information pertinent to this report. The maps and records at the State Historic Preservation Office in Frankfort, and the Office of State Archaeology in Lexington were also examined and copied in the summer of 1992. A recent inquiry determined that no recent surveys had been made near the study area since that time.

The real estate records on file in the office of the County Clerks of the Hardin County Courthouse were searched in an effort to track the land ownership for as much of the Hunting Area as possible. Visits were made to the Hardin County Clerk's office

in Elizabethtown on March 10, and April 1, 1993, and to the Meade County Clerk's office in Brandenburg on March 11 and 12, and April 2, 1993. Further assistance was provided on request by Mr. James Holmberg of the Filson Club in Louisville, and by Ms. Candy Adkinson of the Office of Secretary of State in Frankfort. Mr. Richard A. Briggs, of West Point, was very helpful in tracing land ownership from the earliest land grants to the mid-nineteenth century.

Field Methods

Fieldwork combined pedestrian survey with systematic shovel testing, following guidelines set forth by the Kentucky Heritage Council (1991). The study area contained steep hillsides along its northern and northeastern perimeter with slopes in excess of 20 percent, including some cliffs. These were covered by pedestrian survey except where slopes were too steep to climb. Those cliffs were examined visually from below for sheltering overhangs, petroglyphs, or other evidence of human use. The balance of the project area is generally a set of hills and ridges with karst depressions and sinkholes between the higher points. Most of this area contained slopes of between 6 and 20 percent, and a leaf cover which reduced surface visibility to less than 10 percent. The methodology employed here was pedestrian survey at 20 meter intervals between transects, with shovel tests at the same interval, as measured by pacing. Shovel tests averaged 35 cm in diameter and extended 10 to 40 cm into the soil, stopping at major soil changes. Side walls and soil contents were examined for evidence of cultural material. Most ridgetops were traversed by two-rut dirt roads which afforded 40 to 100 percent visibility.

Roads, powerlines, and pipelines visible on maps provided arbitrary boundaries for breaking the large project area into smaller working subunits. Each was surveyed separately, generally moving in north-south transects, following compass bearings. A general scatter of recent material was seen throughout the survey area, generally consisting of drink containers or lubricant containers, attesting to the light, but fairly constant use of the area by hunters, hikers, and possibly by dismounted military training units. These were not recorded as cultural resources.

When a site was encountered, the interval between shovel tests was reduced to 10 meters, and the shovel test fill was screened through 1/4 inch hardware cloth. Artifacts were bagged in paper bags labeled with the site designation, and the shovel test location, or shovel test sequence number, which correlates to a location on a map kept in the permanent field notes. The 10 meter interval between shovel tests was maintained until two shovel tests in series were determined to be sterile. The line of shovel tests was repeated in all directions until each site was transected with a grid of shovel tests, each measuring approximately 30 x 30 cm to 35 x 35 cm, each excavated to sterile subsoil. Any features visible above ground were mapped using compass and tape.

Additionally, historic sites were examined with a metal detector to augment the determination of site boundaries, and also to collect a sample of construction fasteners to help in dating the sites. These were found by shallow exploration with a trowel; objects not found in the top 10 cm of soil were not pursued further. Only a few such detected metal objects were collected to avoid haphazard collection of materials, and the locations of these metal objects were mapped. All were found at shallow levels and minimal soil disturbance was used to recover them.

Cemeteries are not treated in the manner proscribed for other historic sites. Of course, no shovel tests or other excavations were conducted, and a site form was not filled out. Only cemeteries that are not fenced and have no marked stones require site forms. The Boone Cemetery lying within this Hunting Area is well documented and recorded with the approximately 105 other cemeteries at Fort Knox. It will be protected regardless of eligibility to the National Register of Historic Places, although it may be eligible, due to its early graves, association with persons of some fame, and excellent preservation.

Laboratory Methods

All artifacts were processed at the temporary office of the Staff Archeologist in Building 112, Fort Knox. Processing entailed washing most of the artifacts with tap water, air drying on a screen, labeling with provenience information, and identifying the artifacts. Some artifacts that may deteriorate with wet processing were dry brushed only. Historical artifacts were identified and classified according to a system originally formulated by South (1977) for colonial artifacts. This system has been expanded by archeologists for inclusion of 19th and 20th century materials, but no standard system has been adopted. The system used here is designed to be useful to other researchers, even if using other systems. This approach, like most, divides an assemblage into function groupings, including Kitchen, Architectural, Personal, Clothing, Tobacco, Arms, Furniture, Activities, and Miscellaneous groups. Each major group can be divided into smaller units as required.

No prehistoric artifacts were found within the project area. One prehistoric site was found in Hunting Area 4, but it lies outside of the area to be affected by the timber sale and all known future sales and will not be discussed further.

Curation of Project Materials

All materials collected during the survey are stored in Building 112 at Fort Knox, Kentucky, as a temporary location. Under the Historic Management Plan for Fort Knox, the University of Kentucky, Anthropology Department, will be the permanent repository for all materials retained for study.

V. RESULTS

MAPS AND HISTORIC DOCUMENTS

It is beyond the scope of a Phase I survey to compile a title search for every tract that eventually became a part of HA 4, but just looking into some of the documents pertaining to the Withers family gives some idea of the scope and complexity that would entail. Four problems confront anyone researching original documents pertaining to the first settlers to this area. One, the original land grants describe the land in "meets and bounds", moving from marked tree to marked tree in a manner that cannot be duplicated in the present. Second, the original land grants overlapped each other greatly, and it took a generation or more to sort it all out in the courts. Three, the original surveyors varied in their accuracy, and boundaries changed through time even without title transfers. For example, as late as 1919, the line between Hardin and Meade Counties would be drawn several hundred feet east of its present alignment (as illustrated below).

The fourth problem is the lack of precision in early records, both in content and character. The Withers family is a good case in point. The family history indicates two cousins, William M. Withers and William C. Withers, came from Virginia to settle with their families on lands granted to them in return for service during the Revolution. William M. had an adult son with the same name who later held several offices in Hardin County, took minutes at official meetings, and was County Sheriff in Elizabethtown. The early records, whether deeds, titles, or wills, refers to each of them as William Withers. The problem continues down the generations throughout the nineteenth century with multiple Lewis Withers, H. Withers, and so on. The records include the filing of William Withers' will by William Withers, with William Withers named as executor. It was recorded by William Withers (Hardin County Order Book B 1805-1812:330-331).

Two early twentieth century maps were found in the archival room of Building 77, at Fort Knox, where architectural and engineering drawings pertaining to the post are kept. A portion of one, dated 1903, is represented in Figure 4. The only man-made features on the map that are plotted within the 1993 project area are two symbols for houses or structures within a cleared, square area near the north-center of what is now Hunting Area 4. Note that Highway 31W does not exist at that time. It is probable that the two mapped structures are representations of the remains identified here as 15Hd481, since the two components of 15Hd481 have the same juxtaposition and general location.

The second map is a series of sheets or plats showing property boundaries at the time of construction of Camp Knox. These are dated May, 1919, and each sheet bears the



Figure 4. Portion of the 1903 Map of Camp Knox.

title *Camp Knox Real Estate Map*. Copies are on file at the office of the Land Manager, Building 112. Even the appropriate parts of one is too large to reproduce here, so pertinent data from Sheet 10 have been transferred to the map in Figure 5. This map transfer also contains present-day landmarks as dotted line approximations.

The two structures shown on the 1903 map do not appear on the 1919 map. It is possible that only residences visible from the road are shown on either of these maps. Outbuildings near residences are shown, but outlying barns, common in some areas, are not represented. From what is shown, the actual project area contained three residence sites in 1919, all on the periphery of HA 4. The W. W. Withers residence in the northwest corner of the map near the Withers Cemetery corresponds to 15Md151, recorded in Hunting Area 2 by O'Malley (1980:63-64). The residence associated with the name A. J. Bensing is at or near the location of site 15Md335, described in the next section of this chapter. A second house site is mapped southwest of Bensing where a picnic pavilion parking lot is now located. The third is in an area that steeply falls to either side of a north-south ridge. The ridge top must have been the location of this pair of small structures, and a dirt road runs along the ridge now. The road was walked and raked where leaves obscured the ground. No evidence of a house site could be found in that area.

The shapes of the private holdings in the 1919 map are interesting, and probably evolved from the original land surveys at some point or points in time. An attempt was made to trace some of the holdings back through time at the respective courthouses, with incomplete results. Mr. Richard A. Briggs, of West Point, was particularly helpful, and shared a photocopy of a hand-drawn map he found in the court records of the Meade County Courthouse. The photocopy could not be reproduced legibly, but the details are rendered as faithfully as possible in Figure 6. (An unsuccessful attempt was made to relocate the original map but the document box number citation is unknown at this time). The beaded lines represent the original land grants from which the straight-lined boundaries descended.

As noted, William C. Withers did not arrive at his land in Hardin County until 1808. He died in 1809, and some of his land, 213 acres, was eventually (1824) divided into three equal parts between sons John, Lewis, and Howard (Hardin County Deed Book A:77-78). It is not clear what happened to the rest of his land, which should have totaled 500 acres. The value of the three sons' parcels may have been equal, but the acreages were not. The size of the three lots is given as 53 acres, 83 acres, and 83 acres. But that adds up to 219 acres, not 213. The names on the map in each land tract pertain to the owners at the time of the map, which is dated December, 1848. The L. Withers indicated on this map was the middle son (of the three listed), Lewis C. Withers, (1799-1882). He and his wife, Mary, were listed in the 1850 census as having sons Lewis M. (18), John B. (16), William B. (11), David B. (8), Henry M. (5), and Worder W. (2); no daughters were listed (Sims 1984:7). According to the codicil to his will, dated February 24, 1871, Lewis left his "home farm, about 400 acres with household and

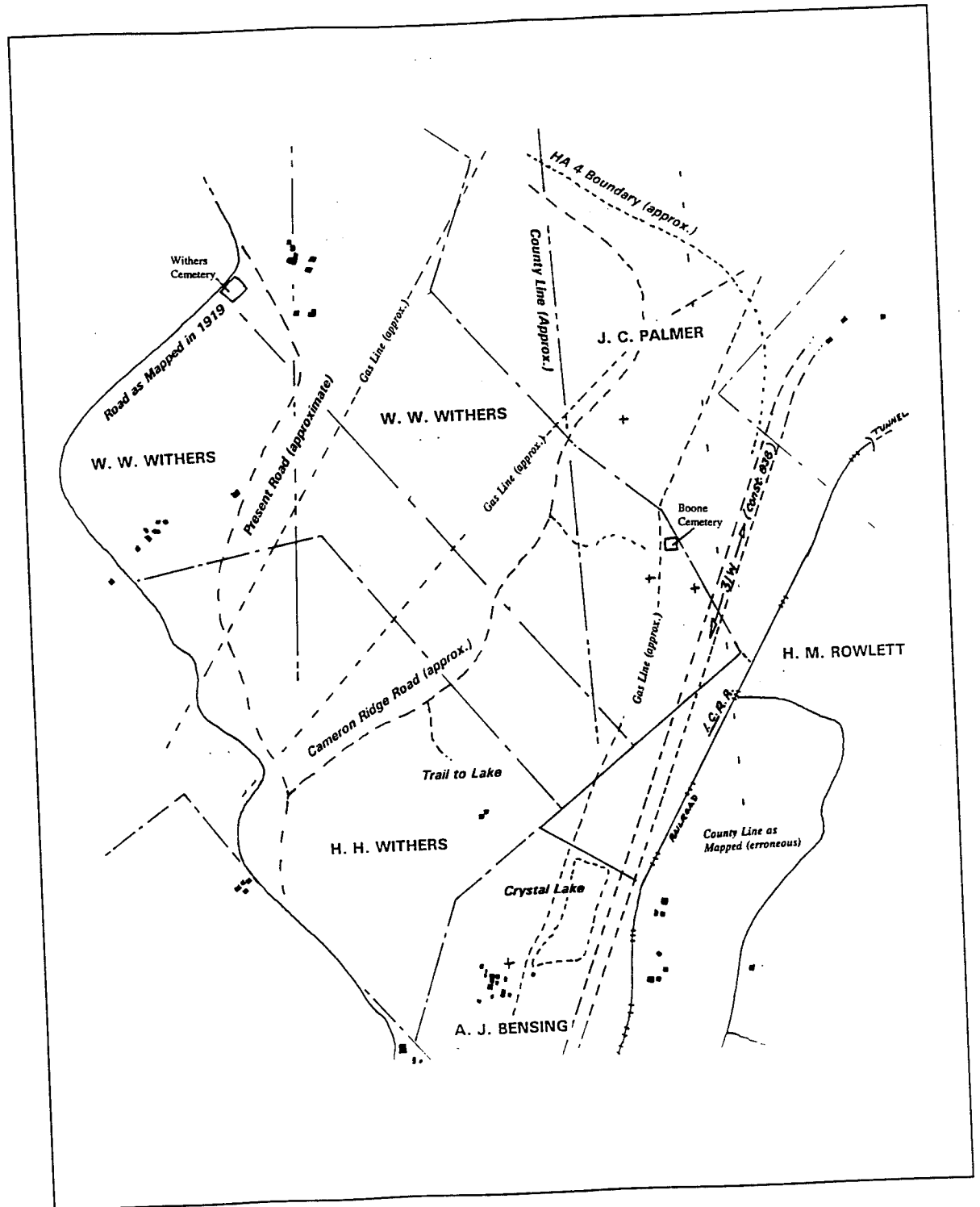


Figure 5. Property Lines in Hunting Area 4 from 1919 Map.

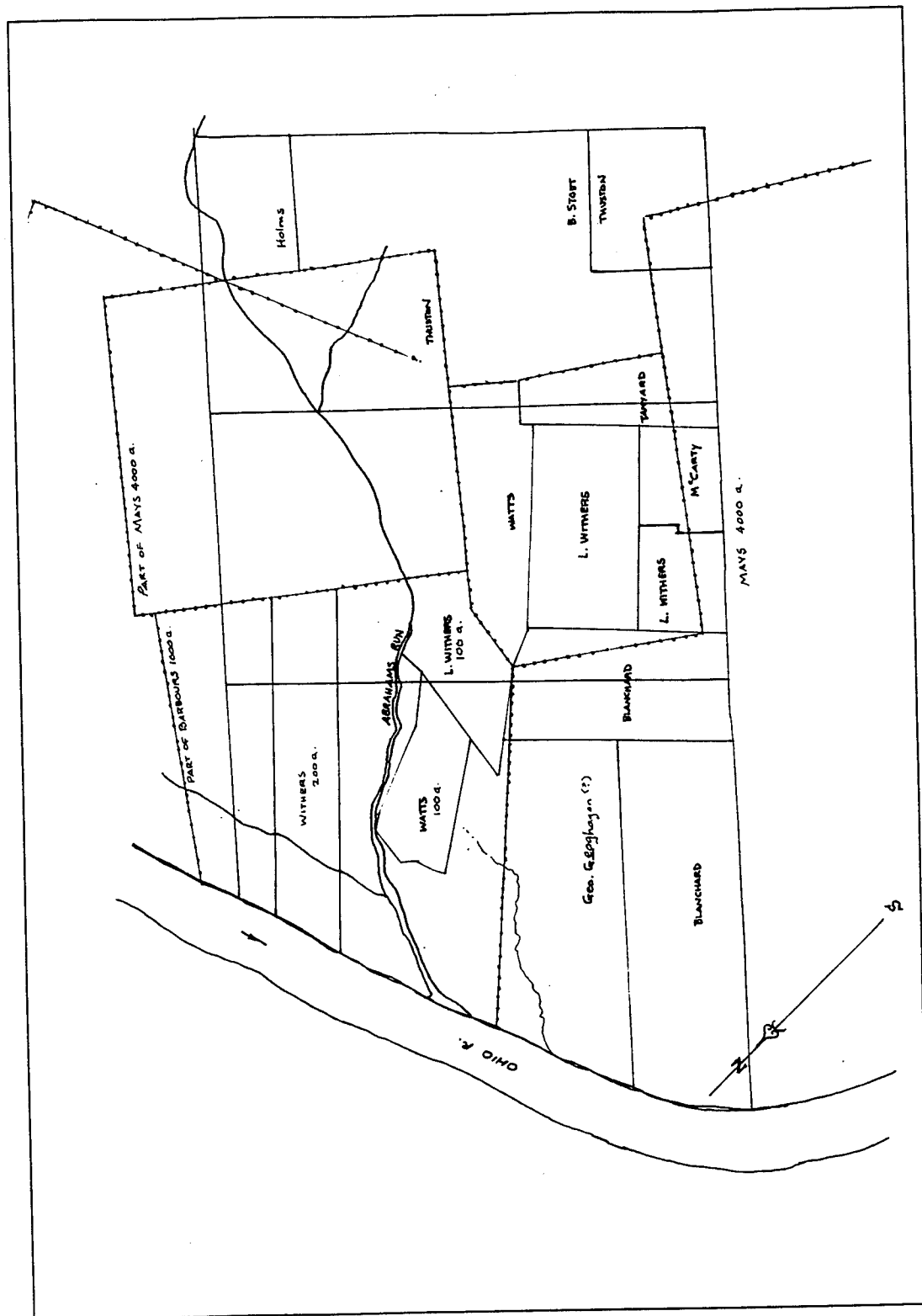


Figure 6. Sketch Derived from 1848 Map of Resurveyed Lands.

kitchen [and] furniture" to his wife (Hardin County Will Book B:343-344). From her, descent was to the children; presumably, the land was broken up in a similarly confusing fashion to the method used for his father's land. The youngest son is the W. W. Withers on the 1919 map.

SITE DESCRIPTIONS

The survey of Hunting Area 4 resulted in the recording of one prehistoric site, 15Hd480, and three historic sites, 15Md335, 15Hd479, and 15Hd481. Site 15Hd479 also contained evidence of a prehistoric component. All are situated near springs on high undulating and ridged, forested land. All are in second growth forest. The historic cemetery is not listed as a site as it is fenced and cared for at intervals. Of the numerous cemeteries within Fort Knox, it contains some of the oldest graves, including Enoch Boone, a nephew of Daniel Boone, and William C. Withers, who served in the American Revolution and died in 1809.

15Hd480

Site Description: Prehistoric Lithic Scatter
Components: Unassigned Prehistoric
Elevation: 680 feet AMSL
Size: 400 square meters
Nearest Water, Distance, Direction: spring, 100 m, west
Topography: Narrow ridgetop in dissected highlands
Vegetation: Mature deciduous forest
Ground Visibility: 0 - 10 percent

This site is represented by a thin scatter of lithic material found in surface and shovel test collections on a ridge along the west side of Round Hollow. This location is at the extreme east margin of Hunting Area 4. Since none of the artifacts are diagnostic, no specific discussion of cultural affiliations can be postulated at this point. The ridge containing the site separates from the larger body, called Cameron Ridge, at the Boone Cemetery. Boone Cemetery and this site lie outside the timber sale tract and will not be affected by it. Before the 1930s, the narrow ridge containing this site extended to the east side of what is now Highway 31W and defined the south, or upper end of Round Hollow. It is possible that the extent of this site was greater prior to the construction of the highway. At present, the ridge stops abruptly at a vertical limestone cliff looking down on the highway some 30 m below.

A deeply worn historic trail or road passes by the site from the northwest to the southeast. The trail also passes by Boone Cemetery approximately 150 m northwest of

the site, and extends beyond the cemetery toward other sites including site 15Md481, reported here, and historic sites on the east side of the highway. The trail was not included in this site as a component, and is mentioned only due to the possibility that the traffic and erosion that left the visible trail may have removed a portion of the site.

Only one artifact was found on the surface, probably due to the heavy leaf cover. Positive shovel tests and the artifacts found are listed in Table 2, and their locations can be seen on the site map, Figure 7.

National Register eligibility has not been determined. Further testing is scheduled to run concurrently with the timber sale project, and a report will be submitted following these efforts to determine the site's of significance.

Table 2. Artifacts Found at Site 15Hd480.

<u>Location</u>	<u>Artifact Type</u>	<u>Material</u>	<u>Quantity</u>
ST-1	Flake, Unifacially Retouched	Gray Chert	1
	Flake, Cortical	Gray Chert	1
ST-5	Flake, Secondary Reduction	Light Gray Chert	1
ST-6	Flake, Primary Reduction	Light Gray Chert	1
Surface	Flake, Cortical	White Chert Cortex	1
	Total		5

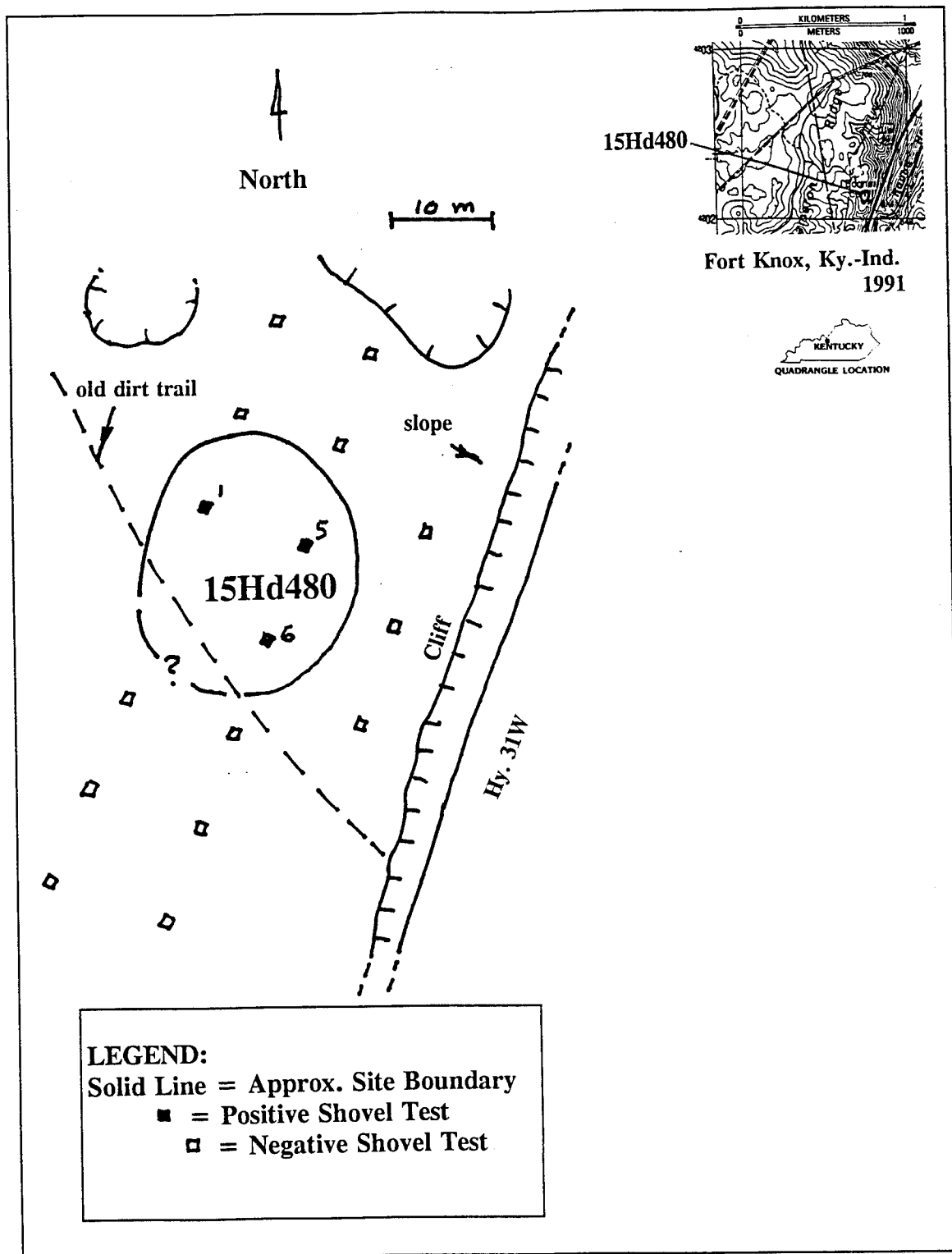


Figure 7. Site Map of Site 15Hd480

15Hd479

Site Description: Prehistoric and Early Historic Period Habitation

Components: Unassigned Prehistoric; 1808 Temporary Homesite

Elevation: 680 feet AMSL

Size: 600 square meters

Nearest Water, Distance, Direction: spring, 10 meters, southeast

Topography: small, nearly flat table in steeply sloping, dissected valley
opening into Round Hollow

Vegetation: mature deciduous hardwood forest

Ground Visibility: 0 - 10 percent

The location of 15Hd479 probably would not have been recorded as more than a small lithic manufacturing station and an isolated historic feature of unknown origin and age had it not been for a local informant, Mr. Claude L. Withers. Mr. Withers gave the author a thumbnail sketch of the Withers family history and described in detail the two sites where his ancestor, William C. Withers, his family, and slaves, had settled. According to Withers family history, this location was their first place of residence upon first arriving from Virginia in 1808. After they established this base, the small community of approximately 25 people, family and slaves, began clearing, farming, building, and fencing, and soon started work on their permanent home about a half-mile farther west.

The site of the permanent home was also described by Mr. C. L. Withers. He characterized it as a two-story brick house, with a kitchen and cellar, and the location and orientation he described coincide perfectly with a historic ruin found during the survey reported by O'Malley and recorded as 15Md151 (O'Malley 1980:63-64; Figure C-1, p. 531). Site 15Md151 was identified on the basis of the artifacts found on the surface as a multicomponent site, since a marginally modified chert flake was found with the historic period items. The historic component was classified as "mid-nineteenth and twentieth century historic occupation prior to military acquisition in 1949" (O'Malley, et al 1980:63). As is commonly the case, the most recent occupations are very likely to have obscured any residual surface indications of occupation during the first 40 or 50 years of its actual use.

Shovel tests were conducted at the location stipulated by Mr. C. L. Withers in an effort to define the boundaries of 15Hd479. The site was said by Mr. Withers to have occupied the less sloping ground immediately above the small cave and spring southwest of Boone Cemetery (Figure 8). The ground fitting that description is a peninsula of nearly flat ground between two ravines 2-3 m deep and 3-4 m across that converge just east of the cave. Shovel tests measuring 30 x 30 cm were excavated to subsoil at 10 m intervals along that portion of the supposed site area; soil was screened through 1/4 inch hardware cloth. Historic artifacts from this grid of shovel tests were found to be thinly

scattered, and lithic artifacts signifying a prehistoric component was found in the area closest to the cave and spring.

A sweep was made over the site with a metal detector after the shovel tests were complete. Metallic objects detected were excavated by trowel and were recorded separately from artifacts found in the formal shovel tests as magnetic anomalies (MA, in Figure 8). More artifacts were found by this method than by the grid of shovel tests, as would be expected; all are recorded in Table 3.

Table 3. Artifacts from 15Hd479.

<u>Location</u>	<u>Artifact Type</u>	<u>Description</u>	<u>Quantity</u>
ST-1	Flake, primary reduction	gray chert	1
	Flake, secondary reduction	gray chert	2
	Flake, cortical	light gray to white	1
ST-5	Flake, secondary reduction	gray chert	2
ST-6	Flake, secondary reduction	gray chert	5
MA-1	Chain, wrought iron links		1
MA-2	Kitchen Group		
	Cook Pot, straight sided,	cast iron	2
MA-3	unknown	cast white metal	1
Total			15

ST = shovel test

MA = magnetic anomaly

Only one feature was observed at this location. It is an excavation, roughly rectangular in outline, opening at one end onto the ravine at the north boundary of the site. A shovel test in the center of this shallow pit revealed that it was probably excavated by hand, but it contained no artifacts, and it exhibited no great depth. Its function is unknown; it has so little humic build-up that it may not date to the pre-Fort Knox period. Oblong depressions are also dug by infantry units, are referred to as "foxholes", and are common in certain training areas around the post, though not singly. The pattern seen in other areas is for the foxholes to be scattered around a hilltop in a perimeter. This feature is the only such depression found in HA 4.

Further testing is recommended to determine National Register eligibility, and is scheduled to run concurrently with the timber sale project.

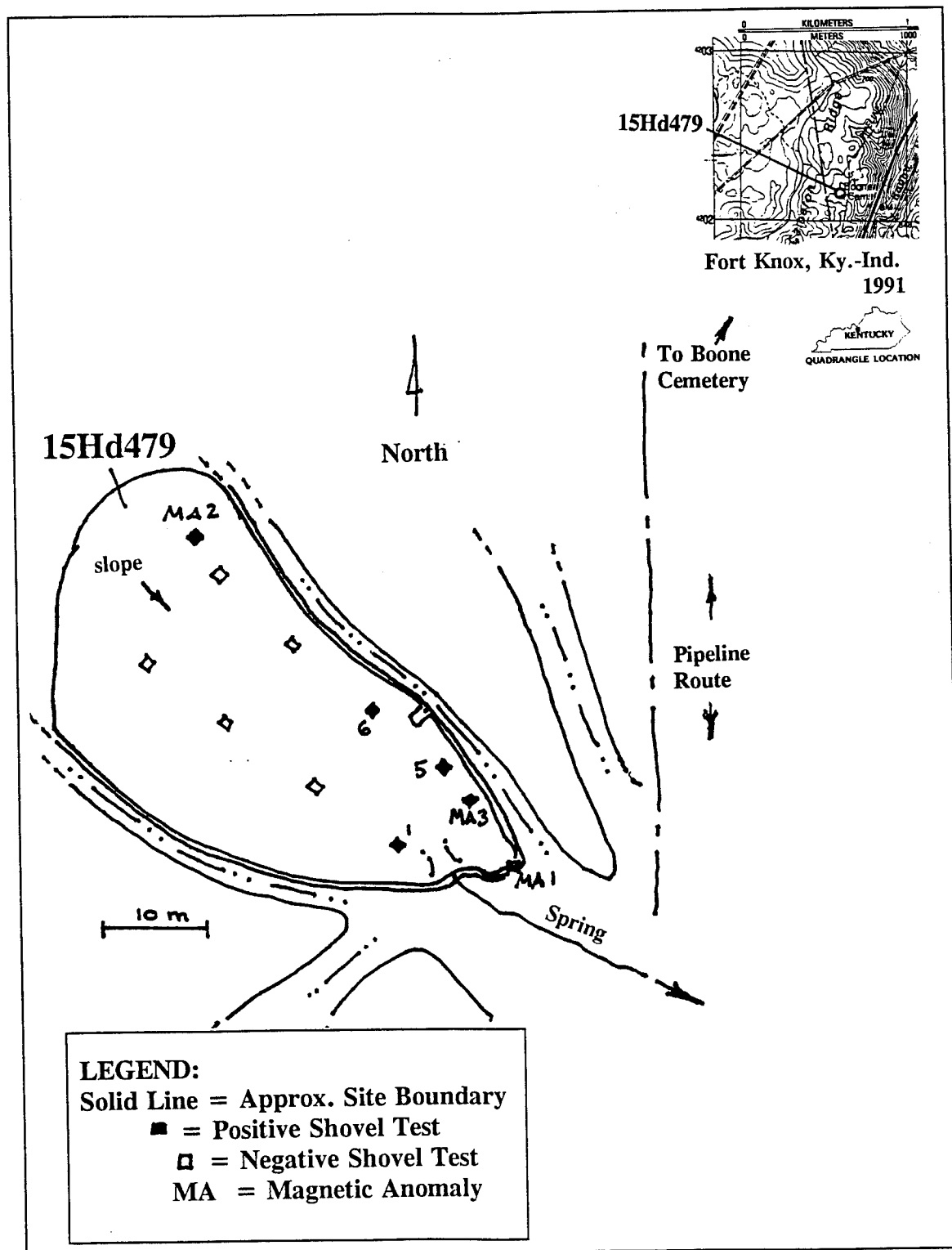


Figure 8. Site Map of Site 15Hd479.

15Hd481

Site Description: Historic complex with three (known) structures
Components: historic, late nineteenth century
Elevation: 740 feet AMSL
Size: 2000 square meters
Nearest Water, Distance, Direction: spring, 90 m, southeast
Topography: karst, ridge and valley
Vegetation: young to mature deciduous hardwoods
Ground Visibility: 0 - 10 percent

The historic elements of 15Hd481 were first thought to be two separate sites. The two components were found on different days and are not visible from each other due to vegetation. The western component is a rectangular pattern of limestone foundation stones on a low knoll on the north side of a broad internally drained basin (Figure 9). Artifacts from the shovel tests suggest the site once contained a residential structure built during the nineteenth century, but occupied into the twentieth century. The few items of domestic refuse can only be generally dated to the late nineteenth and early twentieth centuries. No outbuildings were found; no well or other water source could be located. The foundation does not bear evidence of a stone or brick chimney. Artifact density is moderate around the foundation and decreases rapidly with distance from it.

The eastern component of the site contains evidence of two structures along a low saddle forming the northeastern boundary of the dry basin some 50 m northeast of the western component. The structure thought to be the domicile is represented by a rectangular limestone foundation with a brick rubble pile along the northwest wall. The bricks are hand-thrown, moderately porous, and the residual mortar has the soft, powdery feel consistent with burned lime mortar. There is a rectangular depression with scattered foundation stones around it to the northeast of the main domicile. The only artifact visible on the surface, a fragment of a salt-glazed stoneware jar, was found among the foundation stones encircling the depression. The form of the vessel is globular, which was a dominant form prior to the Civil War. Certainly, exceptions to the observation will be found among the works of local potters, but mass-produced stonewares tended to be cylindrical after about 1865 (Webster 1975:22).

Time and weather permitted only one shovel test on the eastern portion of the site, Structures 1 and 2. It was placed well to the southwest to start excavations outside the site boundary and work inward. The shovel test was far from sterile, and contained a magenta transfer-print cup which bears an angled shoulder that suggests a mid-nineteenth century occupation. The two cut nails from the same test also come from the nineteenth century, but no further conclusions can be drawn without a thorough testing program. Further testing to determine National Register eligibility will commence in May, 1993. The artifacts from both components of this site are listed in Table 4.

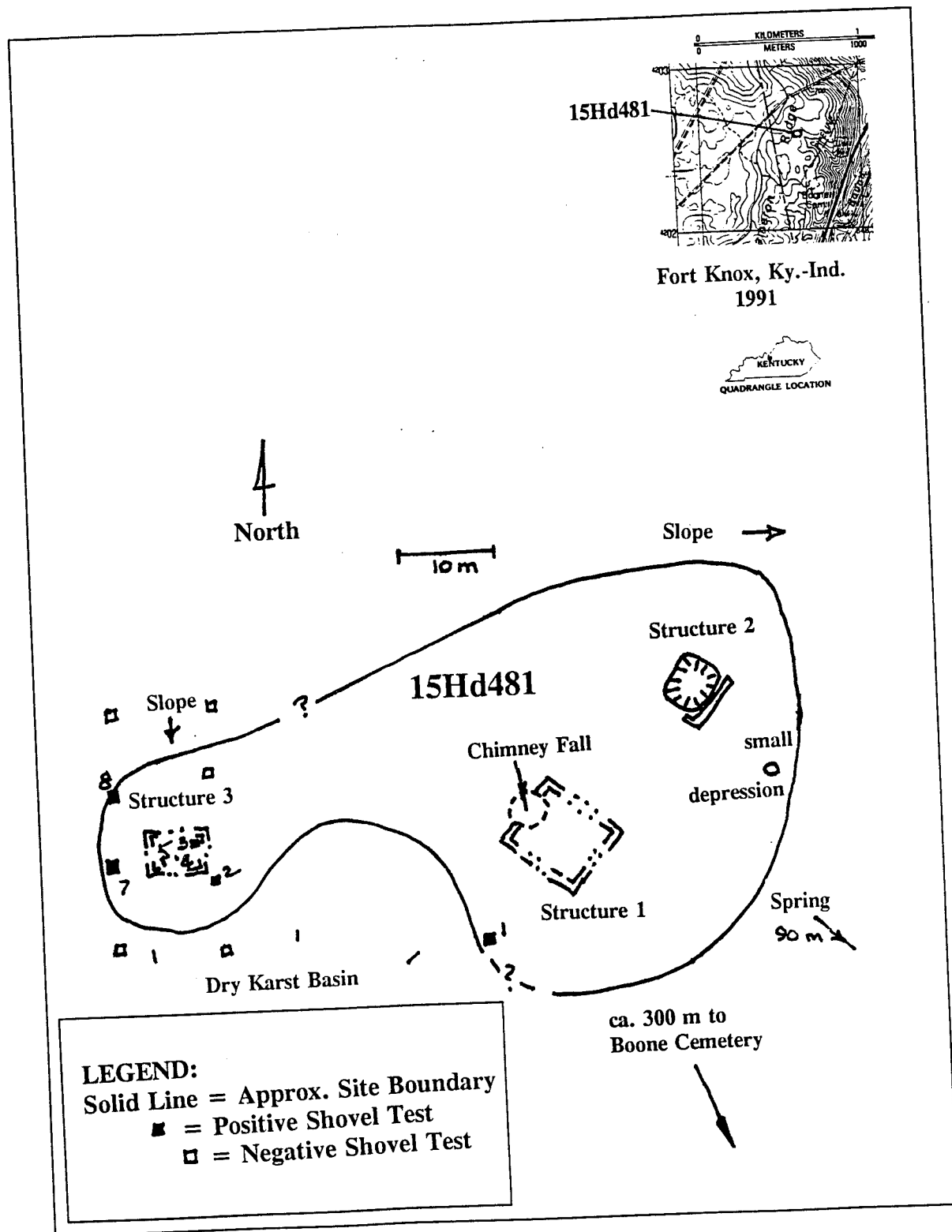


Figure 9. Site Map of Site 15Hd481.

Table 4. Artifacts from 15Hd481.

<u>Location</u>	<u>Artifact Type</u>	<u>Description</u>	<u>Quantity</u>
Structure 1:			
ST-1	Architectural Group		
	Cut Nail		1
	Kitchen Group		
	bottle	body, brown, patinated	1
	cc-ware	cup, magenta transfer-print	1
	ironstone	plate, base; plain	1
Structure 2:			
Surface	Kitchen Artifact Group		
	Stoneware jar rim	salt-glazed, globular	1
Structure 3 (west):			
ST-2	Kitchen Artifact Group		
	bottle neck	ball closure, hand-applied	1
ST-3	Architectural Group		
	cut nail		1
	Kitchen Artifact Group		
	stoneware bowl rim	smooth, banded glaze	1
ST-4 _{mag}	Architectural Group		
	cut nail	common, 12d	1
ST-5 _{mag}	Architectural Group		
	cut nail	common, 6d	1
ST-7	Architectural Group		
	cut nail	common, 16d	1
	wire nail	common, 8d	1
ST-8	Architectural Group		
	cut nail	common, 8d	1
Mag 3	Activities Group		
	froe	fragment near base	1
Mag 4	Architectural Group		
	wire nails	fragmentary, est. 8d	<u>2</u>
ST = shovel test; MA, _{mag} = magnetic anomaly		Total	16

15Md335

Site Description: Earthwork, foundations, cistern, garbage
Components: historic, nineteenth (?) and twentieth century
Elevation: 680-700 feet AMSL
Size: 200 square meters
Nearest Water, Distance, Direction: spring, 20 m, southeast
Topography: steep slope in karst hills
Vegetation: young to mature deciduous hardwood forest
Ground Visibility: 0 - 10 percent

This site is outside of the 270 acre timber sale tract, at the southwest corner of Crystal Lake. The site consists of artificial terracing, supposedly for structure platforms, foundations, cisterns, and twentieth century garbage. Part of one cement foundation is visible on one platform, and two brick and cement cisterns are situated on the platform above that (Figure 10). All are on a steep hillside above a cave. A spring flows from the cave, and other seeps combine with it to form the water source for Crystal Lake. The cement foundations of a small spring house are placed to take advantage of one of the seeps northeast of the mouth of the cave. Most of the visible garbage and trash on the surface of the site can be dated from recent months to the 1950s. No shovel test excavations were conducted at this site, and no artifacts were collected.

Digging into deeper piles of rubbish disclosed cans and bottles from the 1940s and 1930s, but there is a notable absence of table ceramics or other domestic or farming artifacts. Mr. C. L. Withers was also helpful about this site. Although he did not know of the site's origins or age, he did not think it dated to the nineteenth century. Its function, as he recalls, was that of a bar or beer hall, and it was in use in the 1930s. The site was acquired by the U.S. Government in 1940. The cave has been boarded up. The lake is maintained and stocked with fish by the Fish and Wildlife Section of the Directorate of Engineering and Housing at Fort Knox.

This site is not scheduled for further work at this time. Based on information available at present, the site does not appear to meet the criteria for eligibility to the National Register of Historic Places.

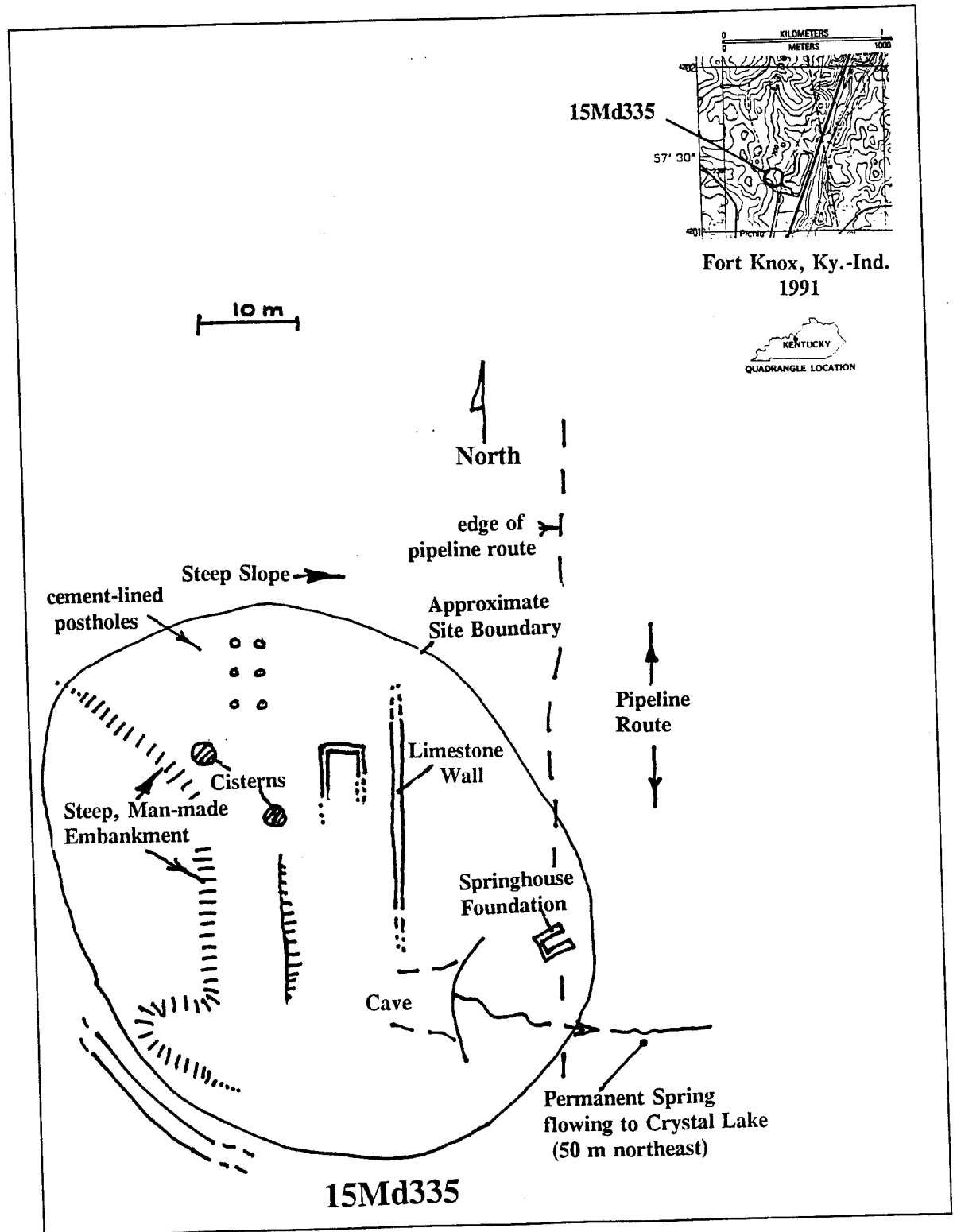


Figure 10. Site Map of Site 15Md335.

VI. SUMMARY AND CONCLUSIONS

The survey of 813 acres in Hunting Area 4, Fort Knox, Kentucky, resulted in the recording of four sites. The timber sale project for which the survey was initiated will have a direct impact on 22 small, rectangular tracts which will be logged. To account for logging roads and other unforeseeable impacts, a project boundary was drawn which encompasses 270 acres. All activities concerning the harvesting of timber will be confined to this area. Two of the archeological sites found during the survey lie within the 270 acre tract. The other two sites, 15Md335 and 15Hd480, will not be affected by the project.

Steps have been taken to insure that the two sites within the project boundaries, 15Hd479 and 15Hd481, will not be affected by the project. In the case of 15Hd479, the timber sale tract boundary was moved to the northwest outside of the mapped boundary of the site, and the approach to the sale tract will be from the opposite end of the tract. Similarly, only the western portion of 15Hd481 originally fell within the bounds of a sale tract. The tract boundary was moved so that no cutting will take place within the site boundaries, and no vehicles will drive over the site. Both sites will be monitored on a daily basis during the sale period to insure that protection is afforded both sites. Road construction will also be monitored to detect any unforeseen sites. Any such sites will be protected by rerouting the access road or roads.

Further examinations and evaluations of sites 15Hd480 and 15Hd481 are scheduled for May, 1993. The study at both sites will include further expansion of the grid of 30 x 30 cm shovel tests to verify or modify the site boundaries given here. Also, one or more 1 x 1 m trowel excavations should be made within each site's boundaries to determine whether or not intact cultural deposits exist. The information from these tests will be shared with the Office of the State Archaeologist and the SHPO.

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